



Australian Government

Department of the Environment

Carbon Farming Mapping Tool Help Manual (V6.01)

What's New – 28 July 2015

- [New data added to the CMT to support the new ERF methodology “Estimating sequestration of carbon in soils using default values”](#)

What's New - 5 August 2014

CMT has been upgraded to support the following new functionality

- [Simplified access to the Tool - no need to remember login details!](#)
- [Access additional Forest Cover and Landsat datasets from 1990 to 2013](#)
- [Ability to compare datasets](#)
- [Ability to import external data](#)
- [Ability to select and download Forest Cover Data](#)

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Introduction

The Carbon Farming Initiative is a carbon offsets scheme established by the Australian Government to provide new economic opportunities for farmers, forest growers and landholders and help the environment by reducing carbon pollution.

The Carbon Farming Initiative includes:

- Legislation to establish a carbon crediting mechanism;
- Fast-tracked development of methodologies for offset projects; and
- Information and tools to help farmers and landholders benefit from carbon markets.

Many activities under the Carbon Farming Initiative will involve the specific and accurate definition of Project Areas, for the purposes of:

- meeting compliance obligations,
- provision of information to the Administrator and
- for the purpose of estimating abatement.

Most of these activities will be sequestration offsets projects.

The geospatial requirements for the CFI will be regulated by:

- CFI Bill
- CFI Regulations
- CFI methodology determinations, and
- CFI Geospatial Standards

CMT: The Carbon Farming Initiative (CFI) Mapping Tool is a Silverlight based application designed to allow a user to meet these requirements.

This User Manual will assist proponents to use the CFI Mapping Tool (CMT) by providing clear step by step instructions to use of the tool.

Definitions

Project:

A project is the set of activities being undertaken across one or more Project Areas

Project Area:

An area of land on which the set of activities has been, is being, or is to be, carried out and that may or may not include areas that are adjacent to the activities being undertaken but not subject to the activities themselves – these areas must be subsequently excluded from the Carbon Estimation Areas (see Figures on page 11)

Carbon Estimation Areas:

A subset of the Project Area that is defined through stratification or other means and is used to determine the area for calculations for baseline or project abatement estimations, A CEA will exclude certain areas from calculations, ie areas registered as part of the Project Area where activities are not taking place.

A CEA may also be used to refer to other subsets of a Project Area that may be defined under a methodology determination.

Model Point:

A point that is located within a CEA for the purpose of computer based modelling.
[Where this is not applicable the model point in the CMT may be used to identify certain features.].

The primary mapping unit used in the CMT is the Carbon Estimation Area.

What is the CFI Mapping Tool (CMT)?

The CFI Mapping Tool (CMT) is a web application enabling proponents to define geographic areas as required under the methodology for the purpose of estimating abatement.

The CMT enables users to:

- map Carbon Estimation Area(s) using remotely sensed imagery, including:
 - 25m Landsat data for the period from 1990 to 2013;
 - 2.5m SpotMap data acquired in the period 2006-2008;
 - forest extent data for the period from 1990 to 2013;
 - Map Data Sciences Foundation Map
 - 2.5m black & white PRISM data from the ALOS Mission
 - Additional online mapping services
- define CEA Exclusion areas
- determine the gross and net (of exclusion areas) area of CEAs in hectares
- identify a CFI Model Point (latitude and longitude) for entry into the Reforestation Modelling Tool
- import geographic information from other sources; and
- produce summary reports of projects
- save Carbon Estimation Area(s) to their local computer and view and edit saved projects;

A CMT map file may contain multiple CEAs across multiple Project Areas.

To use the application you will need to read the terms and conditions then agree by clicking on the “I ACCEPT THE LICENSE AGREEMENT” button. This will close the dialog and make the application available. If you do not agree to the terms and conditions click the I DO NOT ACCEPT THE LICENSE AGREEMENT button and the application will be closed.

Terms and Conditions

CFI Reforestation Tools TERMS AND CONDITIONS

License Agreement

IMPORTANT

YOU MUST READ AND ACCEPT THESE TERMS AND CONDITIONS BEFORE ACCESSING THE CARBON FARMING INITIATIVE (CFI) REFORESTATION TOOLS WEBSITE ("REFORESTATION TOOLS").

THESE TERMS AND CONDITIONS REPRESENT A LEGAL AGREEMENT ("Contract") BETWEEN THE COMMONWEALTH OF AUSTRALIA AND YOU ("You"). BY CLICKING ON THE "I ACCEPT THE LICENSE AGREEMENT" BUTTON, YOU INDICATE YOUR ACCEPTANCE. YOU MAY BE SUBJECT TO LEGAL PROCEEDINGS IF YOU BREACH THESE TERMS AND CONDITIONS.

IF YOU DO NOT AGREE TO ALL OF THESE TERMS AND CONDITIONS, CLICK ON THE "I DO NOT ACCEPT THE LICENSE AGREEMENT" BUTTON. IF YOU SELECT THIS OPTION YOU WILL BE UNABLE TO ACCESS THE CFI MAPPING TOOL.

1. Definitions

1.1. In this Agreement, unless the contrary intention appears:

1.2. " Carbon Farming Initiative Tool " or " CFI Mapping Tool " means the carbon farming mapping tool with the same name which is made available through Reforestation Tools.

I ACCEPT THE LICENSE AGREEMENT

I DO NOT ACCEPT THE LICENSE AGREEMENT

Terms and Conditions Dialog

CEA: The Carbon Estimation Area is a specific area of land for which land management practices can be applied and for which carbon sequestration profiles can be created. The specific shape of the land and its size is determined by the defining polygon (shape) that defines the area. A CEA is the net area defined by a Boundary less the sum of the Exclusion area(s) within the Boundary. The model point represents the location (latitude and longitude) for modelling the carbon emissions of the CEA.



Components of a CEA:

- Boundary = green area
- Exclusion = blue area
- Model point = red dot

Boundary: The overall outline of the Carbon Estimation Area (CEA). Each CEA must have a single Boundary polygon, similar to the green outline shown below:



Exclusion: A digitized representation of an area that is not appropriate for the land management activity. This is shown as the blue area in the illustration below.

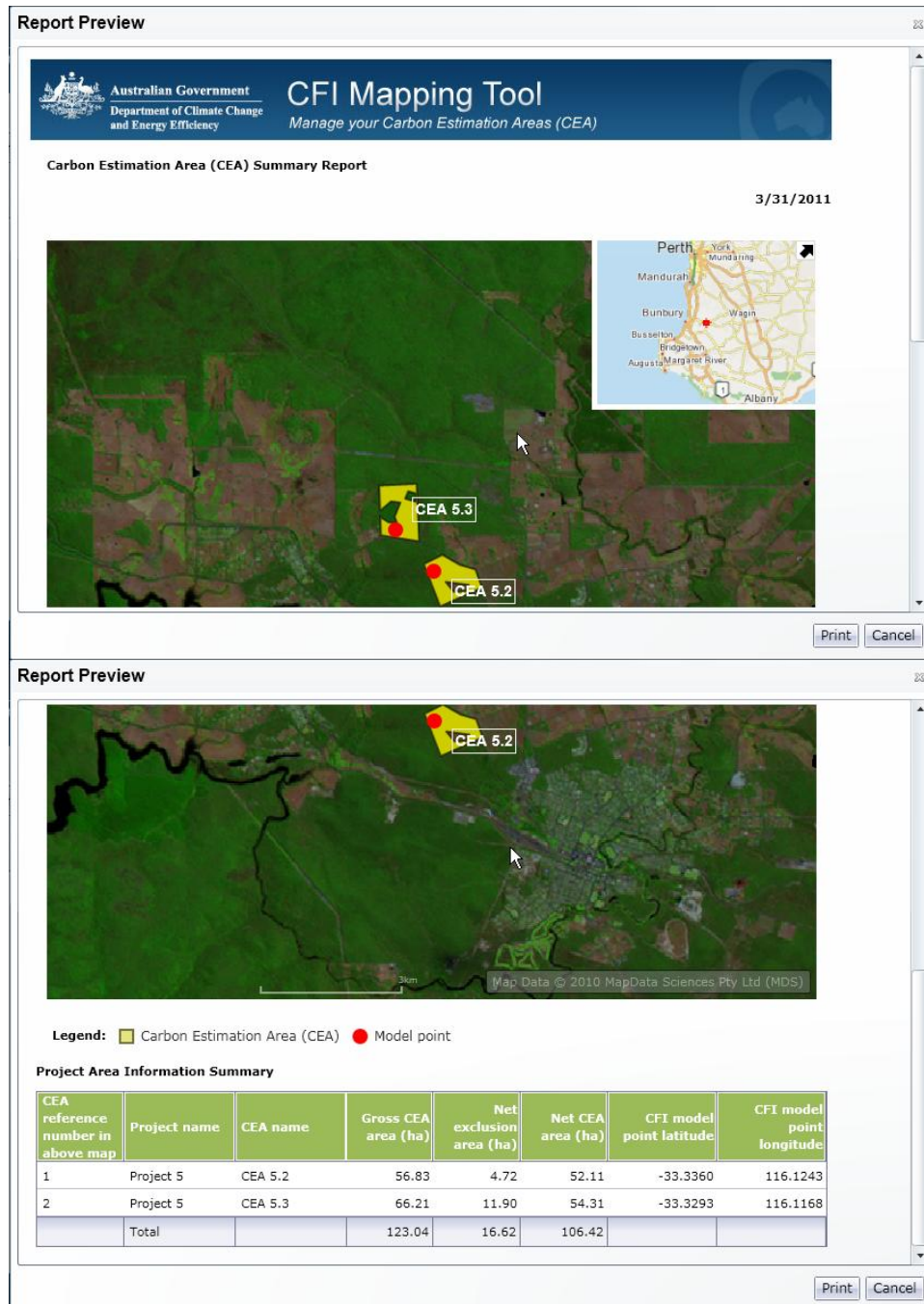
- Each Carbon Estimation Area (CEA) can contain zero or more Exclusions.
- Exclusions may occur wholly within the Boundary (e.g. representing a dam or road), or fall partly outside the Boundary.
- Each individual Exclusion is associated with only one CEA.



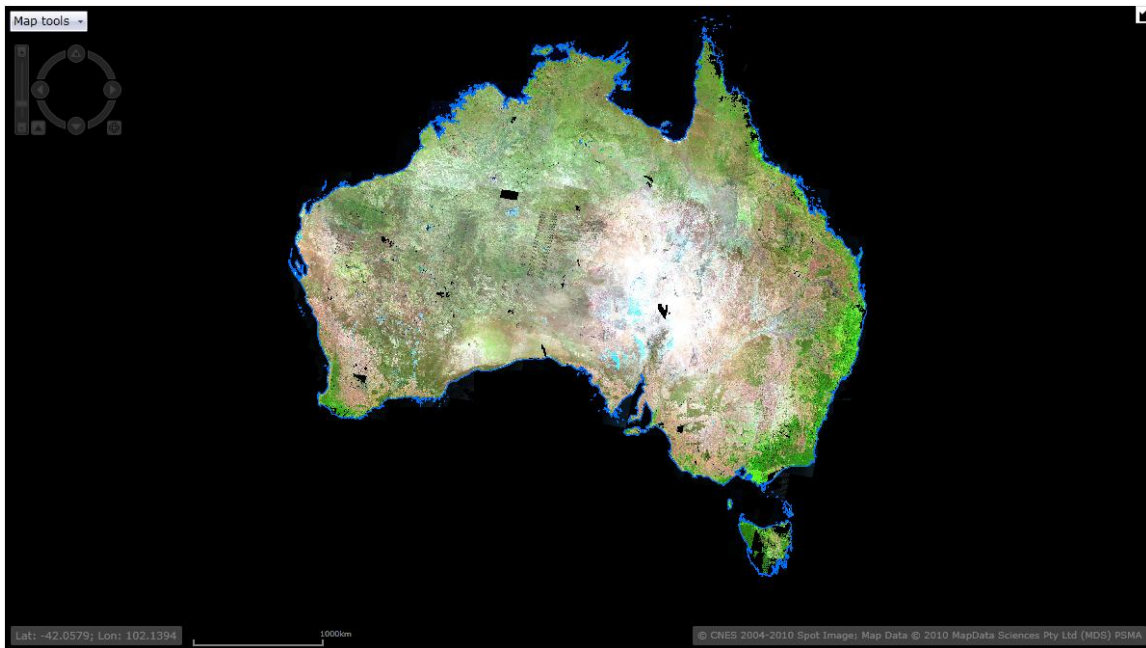
Model Point: A single point of longitude and latitude using the Geodetic Datum of Australia 1994 (GDA94) that exists within a Boundary but cannot lie within an Exclusion, which is used to “define the Carbon Estimation Area (CEA)” for processing within the CFI Reforestation Modelling carbon modelling application. Shown as the red dot in the illustration below



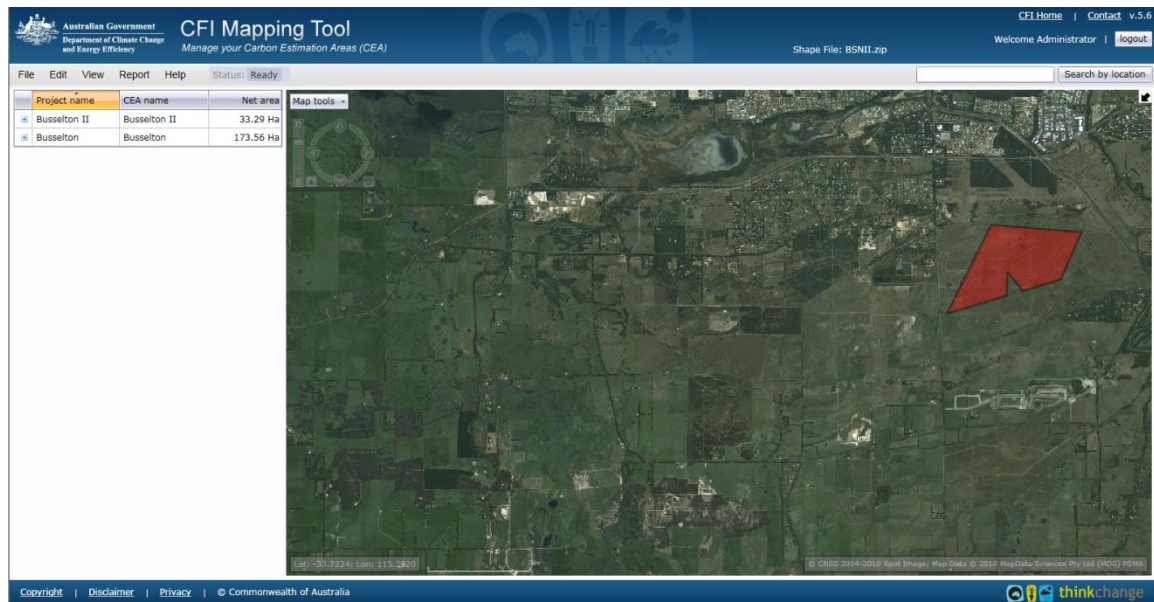
Report: A summary of one or more Carbon Estimation Areas presented in both map and tabular format. Reports are created by a user, and can be viewed online, printed and saved in Adobe Portable Document Format (pdf). An example is shown below:



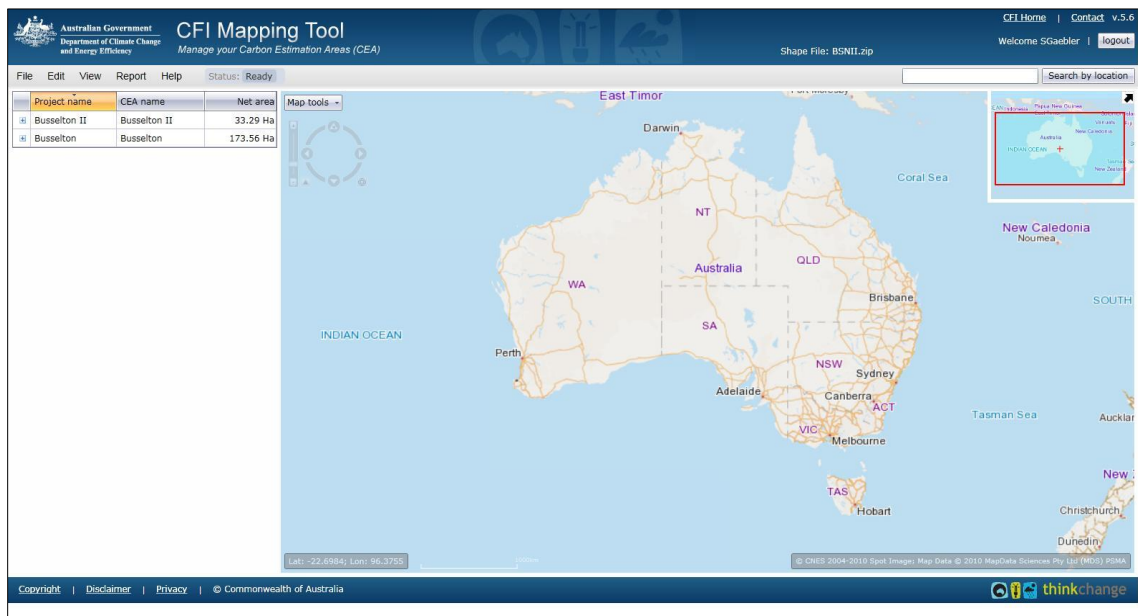
Data Layer: A data layer is a spatial view of information. Data layers within the application include high and medium resolution satellite imagery, street maps, coastline, and forest extents. The example below shows two data layers on the same map: medium resolution Landsat satellite imagery and the coastline (blue outline). Each layer can be turned on and off or be displayed with different levels of transparency using the map services controls available through the maptools/data layers menu.



Default Extent: On the map, the scale (the level into which the map has zoomed) at which all off the existing Carbon Estimation Areas for the current open ShapeFile will display.



Full Extent: On the map, the scale (the level into which the map has zoomed) which shows the most area – for the CFI Mapping Tool, it is all of Australia excluding External Territories.



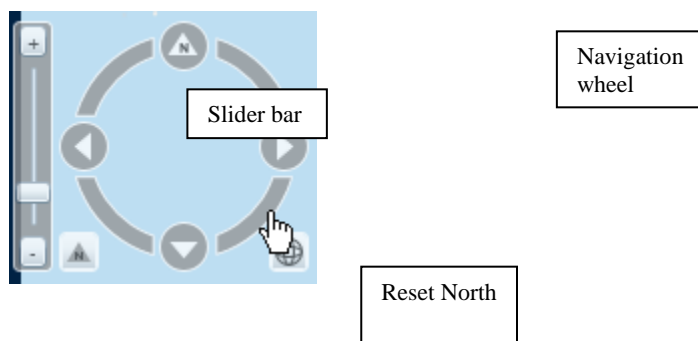
Using the Map

How do I ...

Navigate the map?

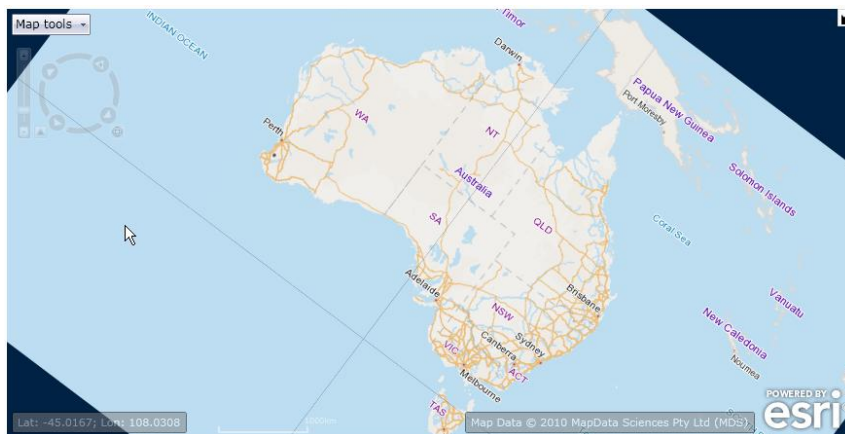
Navigating the map involves three basic functions: zooming in, zooming out, and panning (going sideways). There are two ways to achieve these actions – through the use of the Map Navigation Wheel and via your mouse.

Map Navigation Wheel



- Zoom in – Push the slider bar up towards the plus (+) sign.
- Zoom out – Push the slider bar down towards the minus (-) sign.
- Pan – Click on the arrows on the navigation wheel to move the map in the selected direction.

You can also use the wheel to rotate the map as in the example below. To return the map back pointing north again, click the “Reset North” button.



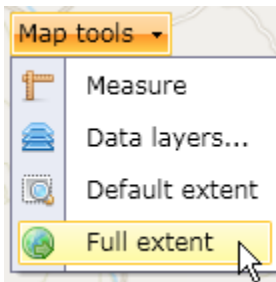
Using your mouse

Begin by placing your cursor on the map.

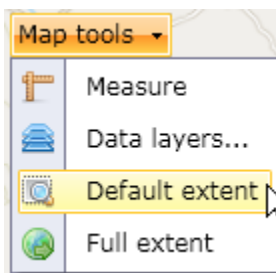
- Zoom in – Push the scroll button forward (away from you).
- Zoom out – Push the scroll button backwards (towards you).
- Pan – Left click on the map and hold the button down. Then you're your mouse in the direction you wish to move.

There are two additional navigation capabilities only a click away. Under the Map Tools menu:

Full Extent – click this option to return the map to its furthest zoom level – all of Australia.



Default Extent – click this option to return the map to the zoom level that displays all of the available polygons.



How do I ...

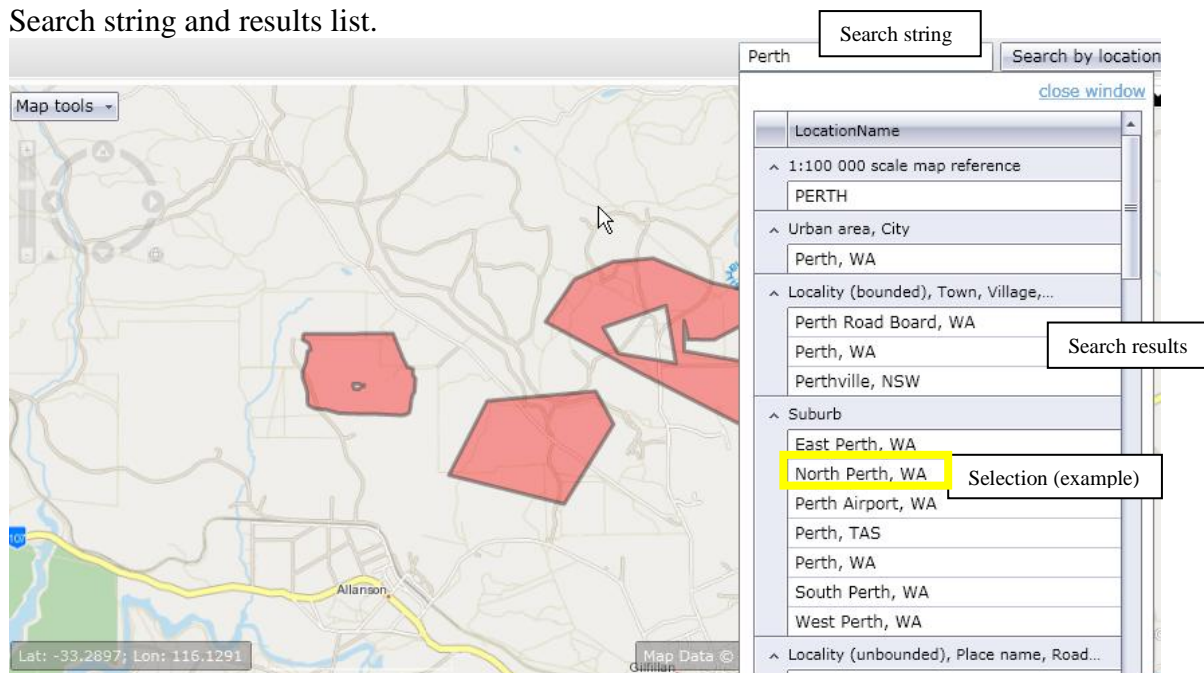
Search for a specific location on the map?

To locate a specific place on the map, use the “Search by location” button and associated text box, located in the upper right hand side of the map.

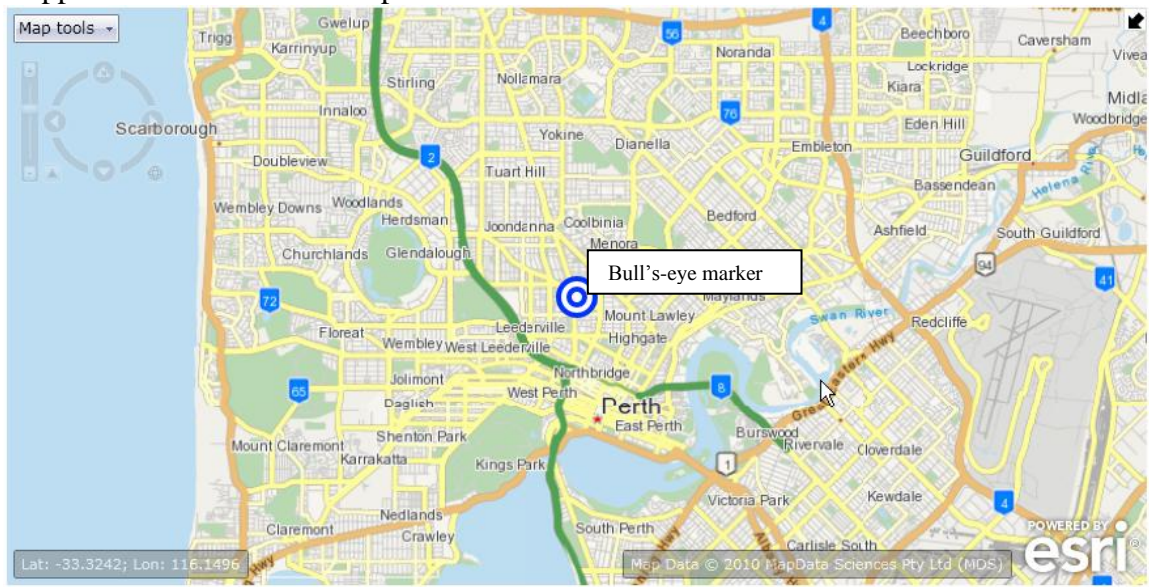
Follow these steps:

1. Enter the text you wish to search with.
2. Press the “Search by location button”. A results box will display.
3. If one or more results are returned, click on the one you wish.
4. The system will zoom to the selected location, placing a bull’s-eye marker at its centre.
5. If no results are found, clear your search string and try another string. Incorrect spellings may result in no results being returned
6. Note: the search results are categorized to make finding the correct selection easier.

Search string and results list.



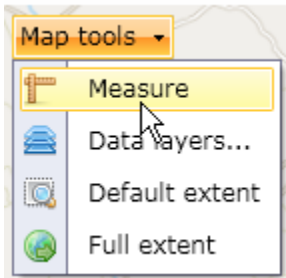
Mapped zoomed to selected option.



How do I ...

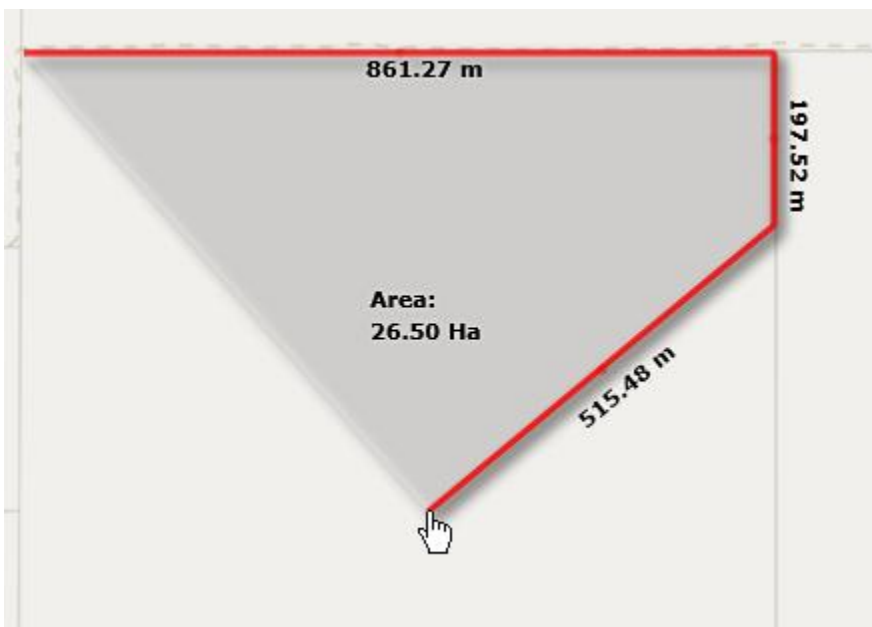
Measure distances and areas?

To measure a distance and area, click on the Map Tools menu on the map, and choose “Measure Tool”.



Then:

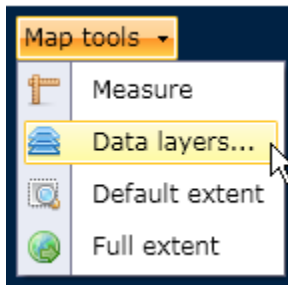
1. Click on the point on the map you want to measure from. Click on another point and the tool will draw a red line with the distance measured in meters (m).
2. Move your mouse so that you are no longer drawing a straight line. An area measurement in hectares (ha) will automatically be calculated.
3. Double click to close the tool.



How do I ...

Add new data layers?

To add a data layer, click on the Map Tools menu on the map, and choose “Data Layers ...”.



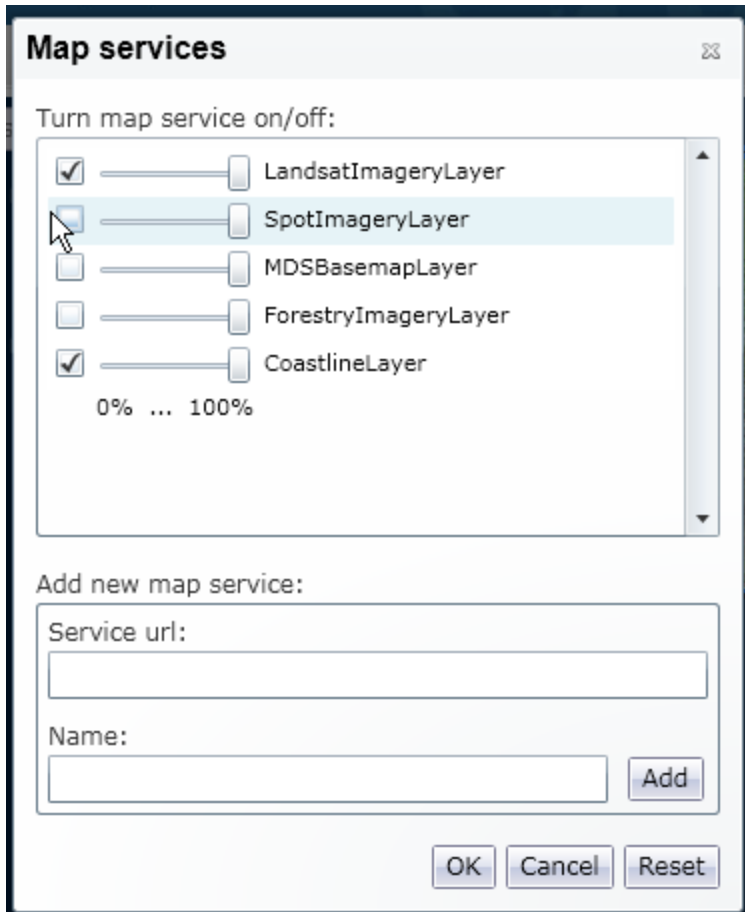
A “Map Services” dialogue box will appear. Map services are web based entities that provide access to particular map data. A number have been made available to the application without you having to ask for them. You simply turn them off or on.

Each map service has a name and corresponding check box. To add the data layer to your map, click the check box on (black “☑”). To remove the data layer from your map, click the check box off (blank).

To adjust the transparency of a data layer:

For each data layer, a slider bar exists. When set to the far right, the data layer is 100% opaque. If the slider bar is all the way to the left, the data layer is 0% opaque (100% transparent). You can adjust the transparency level of any layer. Doing so allows you to see more than one layer on the map at a time, overlain on top of each other. Note that setting transparency levels and overlaying data layers will change the original colours of the data and may make some information hard to see. You need to experiment a little to see what works best for you.

CMT Version 6.01 supports 30 additional data layers which can be turned on and off as [explained on Page 59](#).



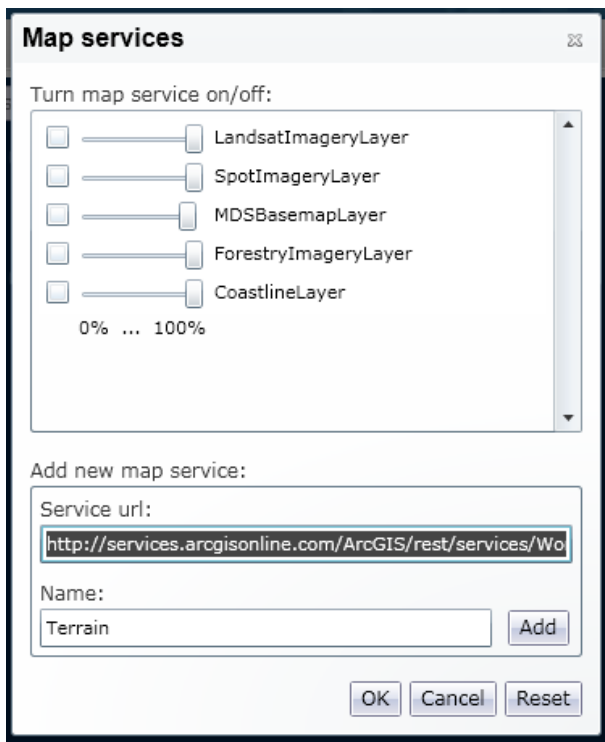
You can also add your own data layer by accessing any available map service. To do so, you need to know the name of the service URL you wish to access. Type the Service url into the first box, provide a more user friendly name in the second (what will display in the dialogue box) and then press the Add button.

Pressing the Cancel button will prevent the URL from being added to your list. Pressing the “Reset” button will restore your list of Map Services to those provided by the system by default (as they were the first time you accessed the system). Pressing the OK button will save your changes, close the dialogue box, and return you to the map.

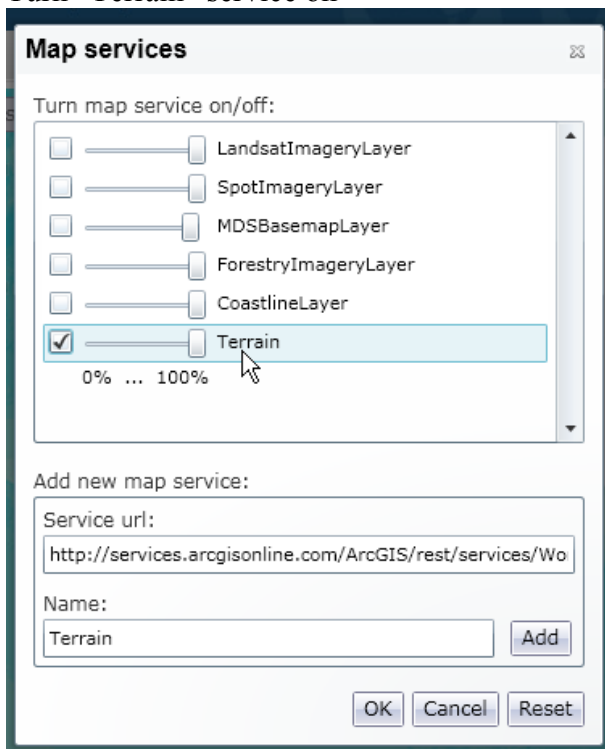
In the example below, the following Terrain map service was added:

http://services.arcgisonline.com/ArcGIS/rest/services/World_Terrain_Base/MapServer

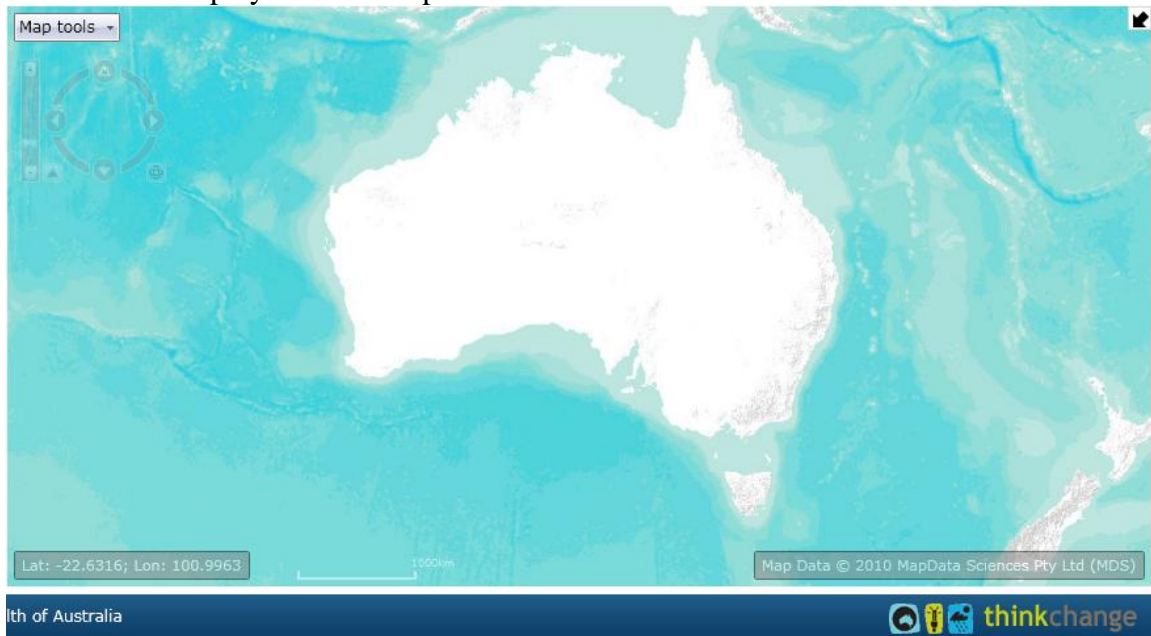
Add new service – “Terrain”



Turn “Terrain” service on



New service displayed in the map:

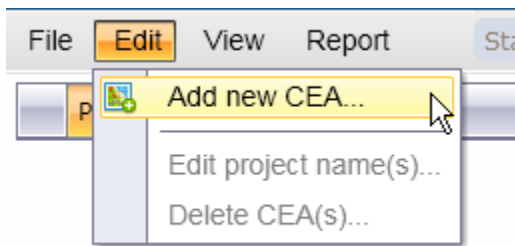


Managing a single Carbon Estimation Area (CEA):

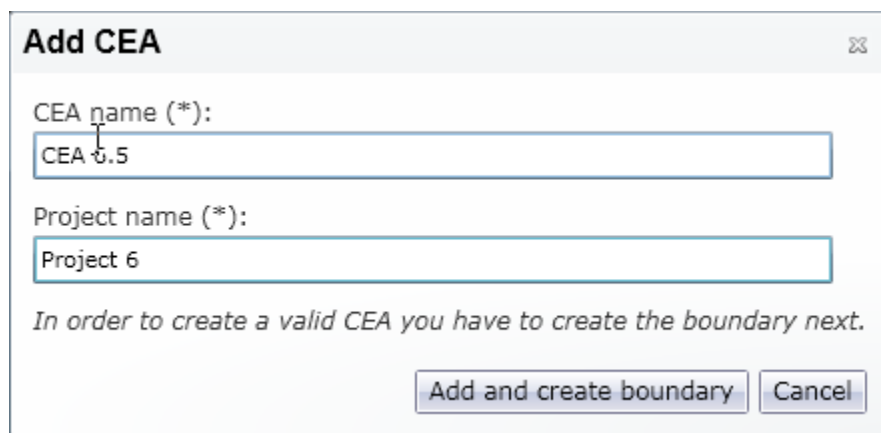
How do I ...

Create a new CEA?

To create a new CEA, select the menu option Edit > Add new CEA.



A dialogue box will appear next. Enter values for the two mandatory fields: CEA name and Project name.

A screenshot of the 'Add CEA' dialog box. It has a title bar with 'Add CEA' and a close button. Inside, there are two text input fields. The first is labeled 'CEA name (*):' and contains the text 'CEA 0.5'. The second is labeled 'Project name (*):' and contains the text 'Project 6'. Below the fields is a message: 'In order to create a valid CEA you have to create the boundary next.' At the bottom right are two buttons: 'Add and create boundary' and 'Cancel'.

Press the “Add and create boundary” button. The dialogue box will close and a new CEA record will appear in the grid. If you are in the “List and Map” view, a panel will open beneath the new CEA record to allow you to draw the boundary and optional exclusions and model point. If you are in the “List only” view, the record will be added to the table, but you will need to switch to the “List and Map” view using the View menu option (top left) to begin creating the boundary.

Note: If you have previously opened a ShapeFile and that ShapeFile has not been deleted, had its name changed or been moved to a different directory and have not

cleared your browsing history cache, then the CEA will be populated with the data from the last ShapeFile opened and that ShapeFile is opened.

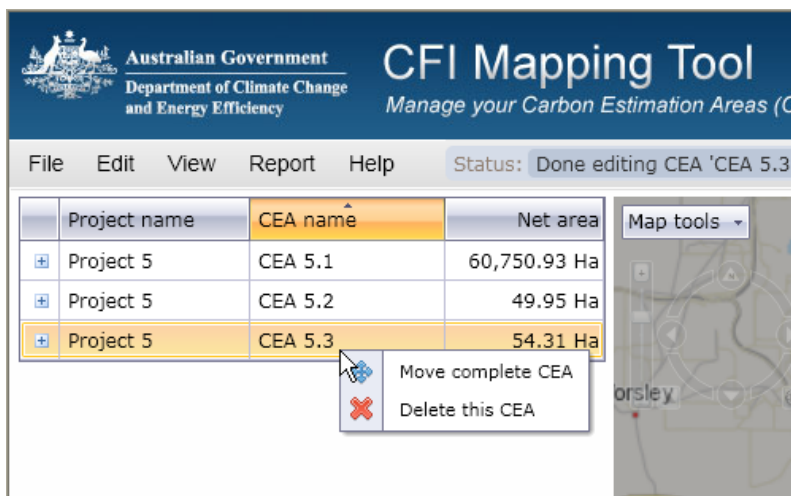
CEAs can also be imported using the [Import Shapefile](#) functionality.

How do I ...

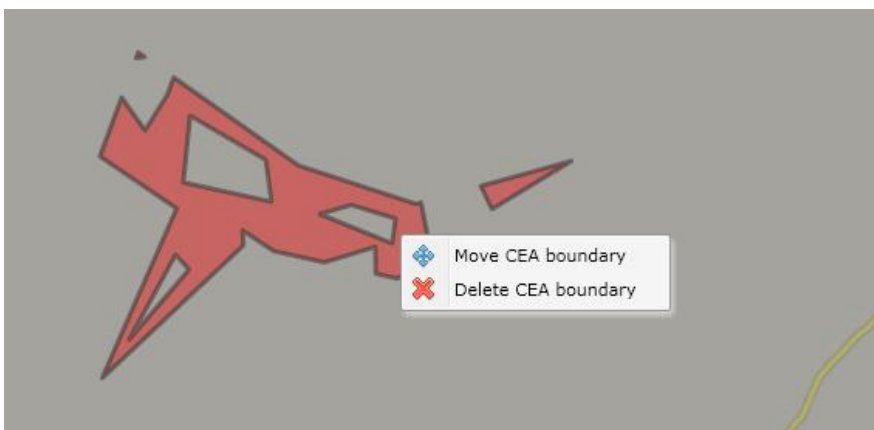
Delete a CEA?

There are three ways to delete a CEA:

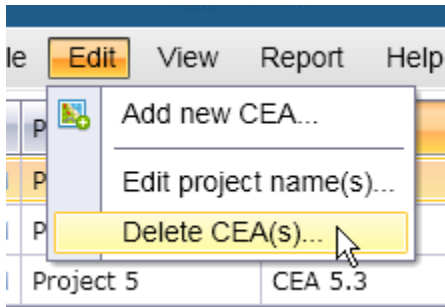
1. **From the List** – right click on the row of the CEA you wish to delete. A pop-up menu will appear. Click the “Delete this CEA” option.



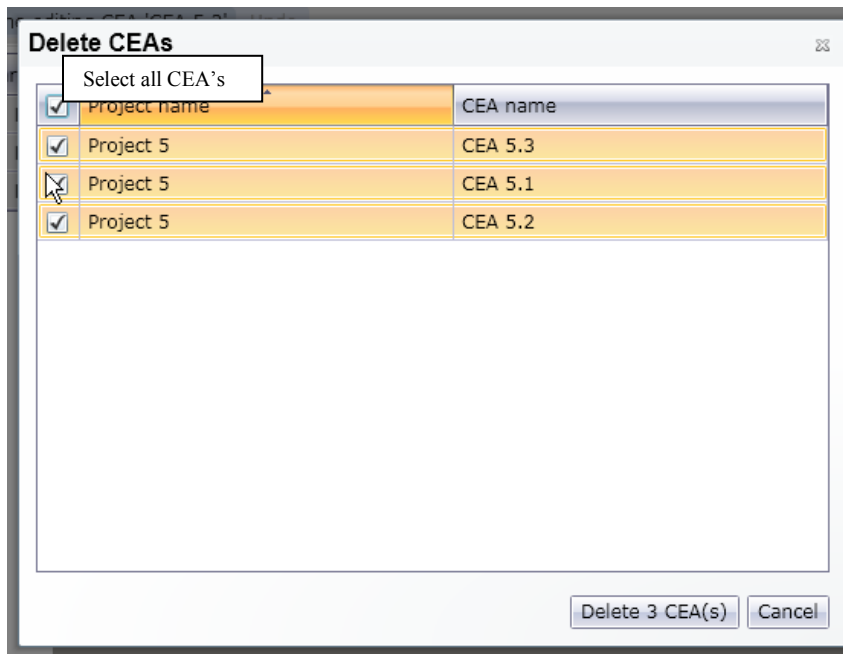
2. **From the Map**. Right click on the CEA boundary. Choose “Delete main boundary”. This will delete the entire CEA including all associated exclusions and model points.



3. **From the menu.** Chose Edit>Delete CEA.(s)



This will display a pop-up box of all the CEAs in the current file. Select one or more, and press the Delete CEAs button.



Tip: Checking the box beside the “Project Name” column header will select ALL of the CEAs in the list.

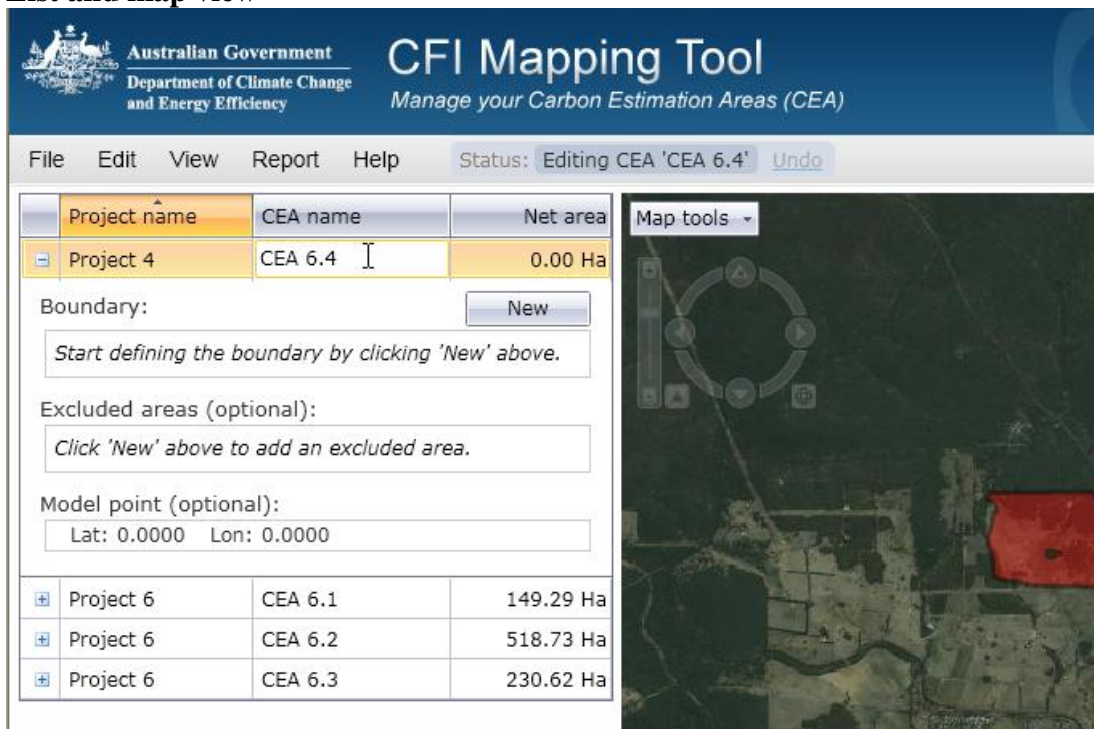
How do I ...

Edit a CEA?

You can edit the Project name and the CEA name for any CEA. You can also edit the boundary, exclusion zones, and Model Point of CEA – please see the appropriate help sections for how to perform those functions.

You can edit the CEA name and the Project name by clicking on the appropriate field in the List table – both in the “List only” and the “List and map” views:

List and map view



Australian Government
Department of Climate Change
and Energy Efficiency

CFI Mapping Tool


Manage your Carbon Estimation Areas (CEA)

File Edit View Report Help Status: Editing CEA 'CEA 6.4' Undo

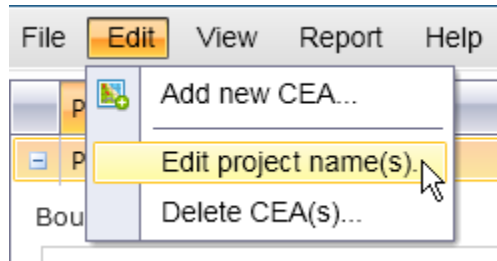
Project name	CEA name	Net area
Project 4	CEA 6.4	0.00 Ha
Boundary: <input type="button" value="New"/>		
Start defining the boundary by clicking 'New' above.		
Excluded areas (optional):		
Click 'New' above to add an excluded area.		
Model point (optional):		
Lat: 0.0000 Lon: 0.0000		
Project 6	CEA 6.1	149.29 Ha
Project 6	CEA 6.2	518.73 Ha
Project 6	CEA 6.3	230.62 Ha

Map tools

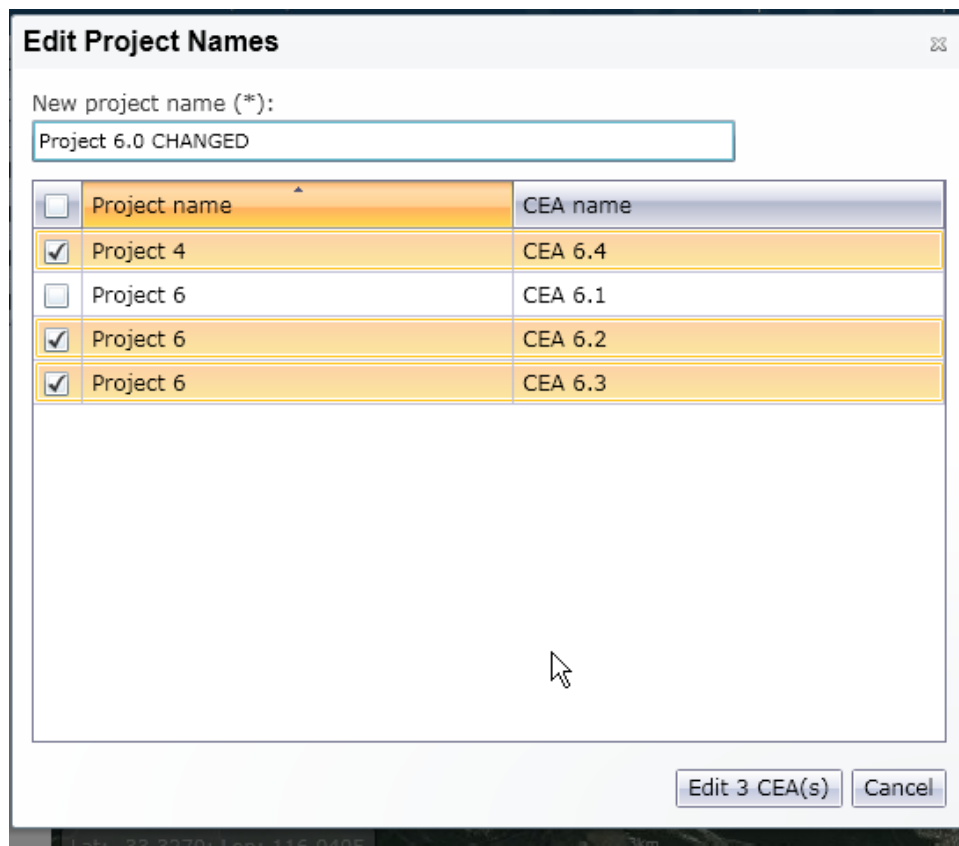
List only view

 Australian Government Department of Climate Change and Energy Efficiency		CFI Mapping Tool <i>Manage your Carbon Estimation Areas (CEA)</i>		CFI Home Contact v.5.4 Welcome administrator logout		
File Edit View Report Help		Status: Editing CEA 'CEA 6.45' Undo		Shape File: Steve6.zip		
Project name	CEA name	Gross area	Net exclusion area	Net area	Model point latitude	Model point longitude
Project 4	CEA 6.4	0.00 Ha	0.00 Ha	0.00 Ha	0.0000	0.0000
Project 6	CEA 6.1	149.98 Ha	0.69 Ha	149.29 Ha	-33.3093	116.0965
Project 6	CEA 6.2	589.87 Ha	71.15 Ha	518.73 Ha	-33.3008	116.1303
Project 6	CEA 6.3	230.62 Ha	0.00 Ha	230.62 Ha	-33.3156	116.1254

An additional option exists for changing the Project name, by using the Edit>Edit project name(s) name menu option.



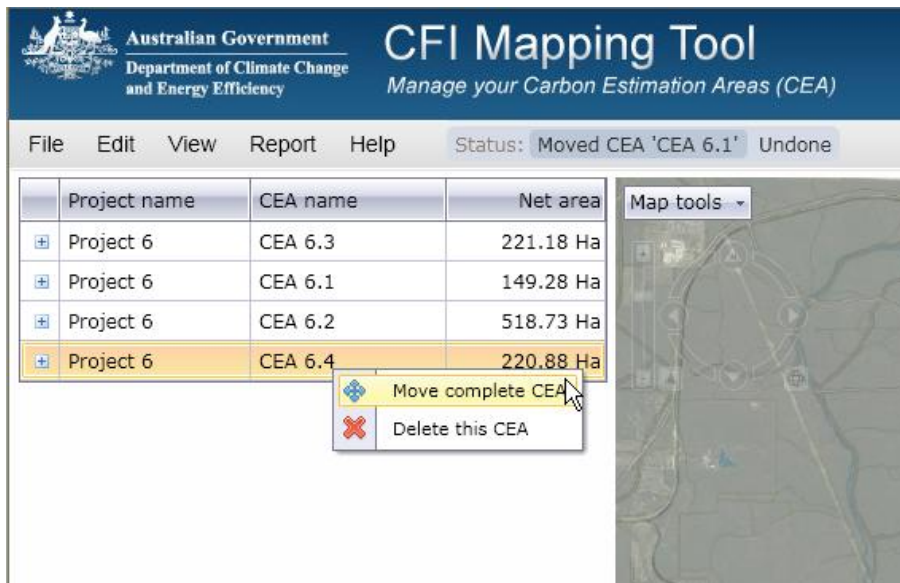
A dialogue box follows in which one or more CEAs can be selected, and a new Project name applied to them. In the example below, three of the CEAs are being given the new Project name “Project 6.0 CHANGED”. Press the “Change 3CEA(s)” button to complete the change; press “Cancel” to quit.



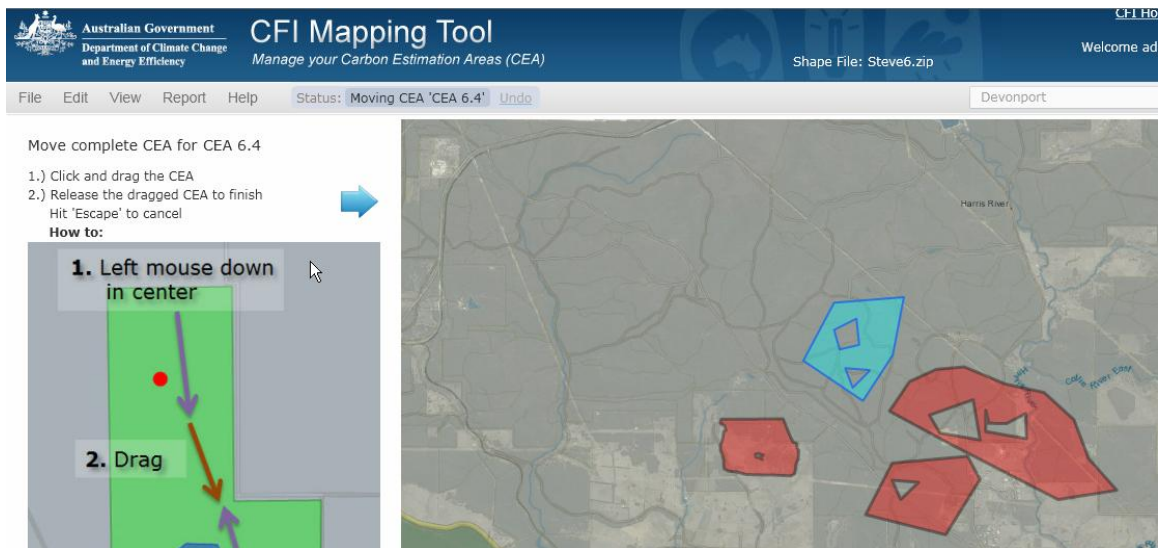
How do I ...

Move a CEA?

To move a CEA, right click on the CEA row in the List table. Chose “Move complete CEA”.



This will activate the selected CEA on the map, indicated by its becoming blue. Click on the blue CEA with the left mouse button, and while holding the button down, slowly move the mouse to drag the CEA. Note that moving a CEA automatically – and without notification – deletes the model point for that CEA if the CEA is moved beyond the model point. The new model point can be entered into the CEA at the new location. Exclusions remain and are moved with the CEA.

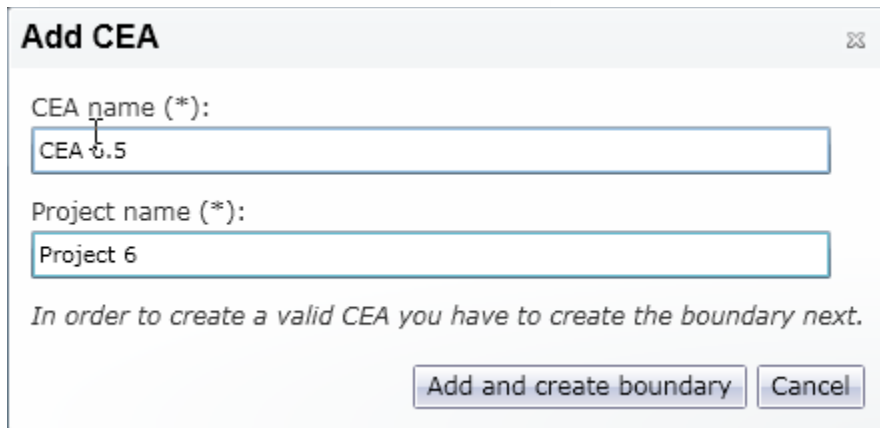
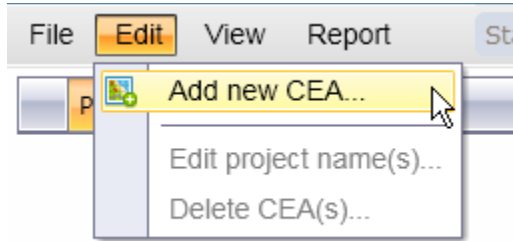


How do I ...

Draw a Boundary?

To draw a boundary for a CEA, you must first create the base record for that CEA by using the menu option Edit >Add new CEA, and then entering a CEA name and project name in the box shown below.

Select option from the Edit menu

A screenshot of a dialog box titled 'Add CEA'. It contains two text input fields. The first field is labeled 'CEA name (*)' and contains the text 'CEA 0.5'. The second field is labeled 'Project name (*)' and contains the text 'Project 6'. Below the fields is a line of italicized text: 'In order to create a valid CEA you have to create the boundary next.' At the bottom right are two buttons: 'Add and create boundary' and 'Cancel'.

Press the “Add and create boundary” button. The dialogue box will close and a new CEA record will appear in the grid. If you are in the “List and Map” view, a panel will open beneath the new CEA record to allow you to draw the boundary by clicking the “New” button in the Boundary section:

	Project name	CEA name	Net area
	Project 6	CEA 6.3	221.18 Ha
	Project 6	CEA 6.1	149.28 Ha
	Project 6	CEA 6.2	518.73 Ha
	Project 6	CEA 6.4	220.94 Ha
	Project 6	CEA 6.5	0.00 Ha

Boundary:

Start defining the boundary by clicking 'New' above.

Excluded areas (optional):

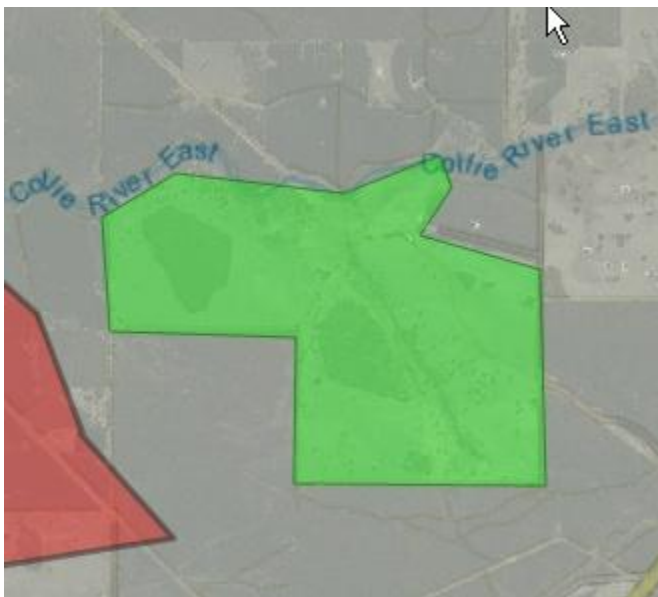
Click 'New' above to add an excluded area.

Model point (optional):

Lat: 0.0000 Lon: 0.0000



Clicking the New button will activate the drawing tool on the map. Click once on the map to mark a starting point. Then single click for each additional point. A green polygon will help you see the area you are defining. Double click to close the boundary.

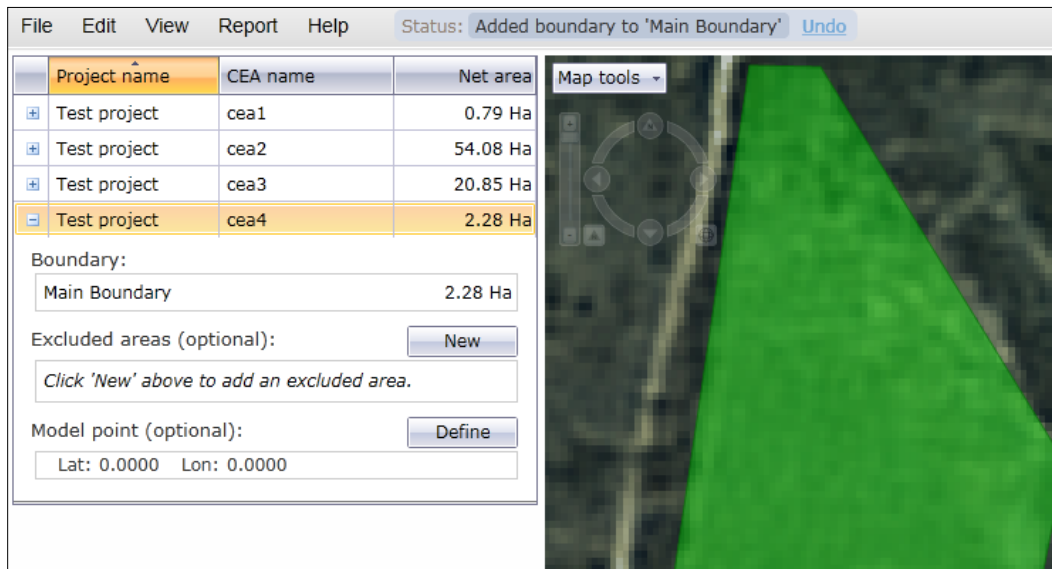


How do I ...

Draw an Exclusion?

An exclusion can only be drawn once a CEA had been created and its boundary drawn. See “How do I ... Create a boundary” for more details.

Once a CEA boundary has been created, you can select and expand the record in the List by using the “+” button on the left hand side.



The option to add a New exclusion boundary will then be available. A CEA can have an unlimited amount of exclusions however each exclusion can only relate to a single CEA.

Clicking the New button will activate the drawing tool on the map. Click once on the map to mark a starting point. Then single click for each additional point. A blue polygon will help you see the area you are defining. Double click to close the boundary.

To add multiple exclusions, click the New button to start drawing each new boundary. Exclusions may be partially or wholly inside the main boundary. The area shown for each exclusion is the area of overlap with the main boundary in hectares.

File Edit View Report Help
Status: Added exclusion 'Exclusion boundary 2' Undo

Project name	CEA name	Net area
Test project	cea1	0.79 Ha
Test project	cea2	54.08 Ha
Test project	cea3	20.85 Ha
Test project	cea4	1.82 Ha

Boundary:

Main Boundary2.28 Ha

Excluded areas (optional):

New

Exclusion Boundary: 10.28 Ha

Exclusion Boundary: 20.17 Ha

Model point (optional):

Define

Lat: 0.0000 Lon: 0.0000

Map tools

How do I ...

Create a Model Point?

A model point can only be drawn once a CEA has been created and its boundary drawn. See “How do I ... Create a boundary” for more details.

Once a CEA boundary has been created, you can select and expand the record in the List by using the “+” button on the left hand side of the project name. The option to define a model point will then be available.

The screenshot displays the CFI Mapping Tool interface. At the top, a menu bar includes File, Edit, View, Report, and Help. The status bar indicates 'Status: Done editing CEA 'cea4'' with an 'Undo' button. The main interface is divided into two panels. The left panel contains a table with the following data:

	Project name	CEA name	Net area
+	Test project	cea1	0.79 Ha
+	Test project	cea2	54.08 Ha
+	Test project	cea3	20.85 Ha
-	Test project	cea4	2.12 Ha

Below the table, the 'Boundary:' section shows 'Main Boundary' with an area of 2.65 Ha. The 'Excluded areas (optional):' section includes a 'New' button and two entries: 'Exclusion Boundary: 1' (0.35 Ha) and 'Exclusion Boundary: 2' (0.17 Ha). The 'Model point (optional):' section features a 'Define' button and displays coordinates: 'Lat: -35.0987' and 'Lon: 149.7685'. The right panel shows a map with a green polygon representing the main boundary and two blue polygons representing excluded areas. A red dot on the map indicates the location of the model point. Map tools are visible in the top left corner of the map area.

A CEA can have only one model point which must lie within the main boundary and cannot lie within an exclusion.

Clicking the Define button to the right of the “Model point (optional)” will activate the drawing tool on the map. Click once on the map to define the point. A red spot will mark the location and the Geodetic Datum of Australia (GDA) coordinates (latitude and longitude in decimal degree) of the point will appear in the list under the active CEA.

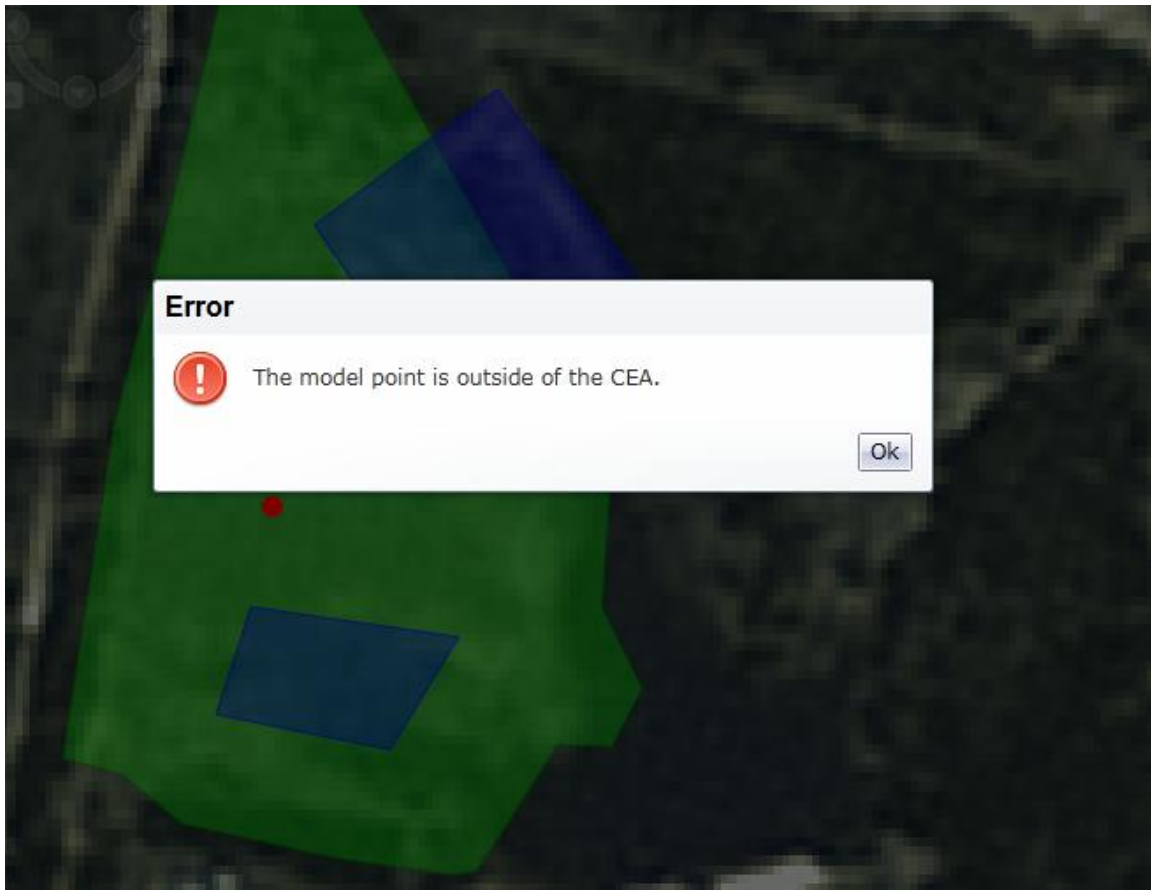
To change the Model point, clicking the Define button to the right of the “Model point (optional):” will activate the drawing tool on the map. Click once on the map to define the

point. A red spot will mark the location and the Geodetic Datum of Australia (GDA) coordinates (latitude and longitude in decimal degrees) of the point will appear in the list under the active CEA.

A Model point can be relocated but not deleted.

Error messages such as the one shown below will indicate if the model point location does not meet the requirements.

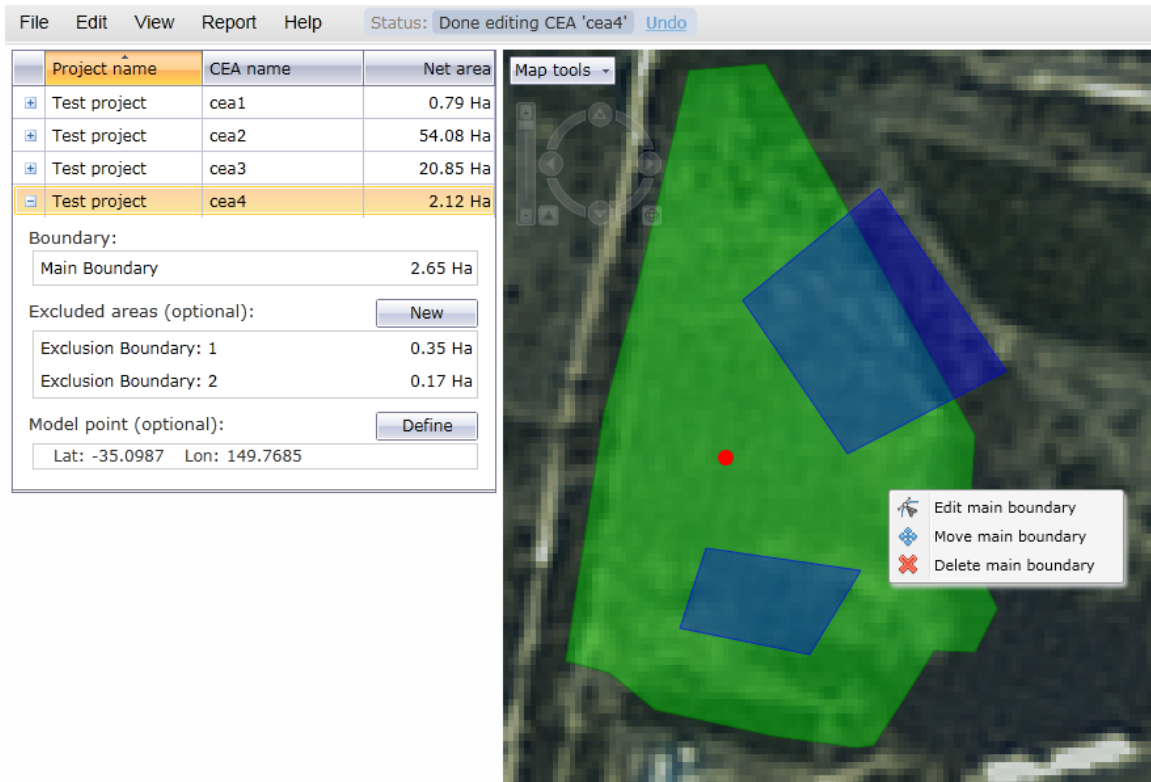
Model points can also be imported using the [Import Shapefile](#) functionality.



How do I ...

Edit a Boundary?

Right clicking on the green main boundary of a CEA will present three options to Edit, move or delete the main boundary.



Select the desired action and follow the directions presented in the left window.

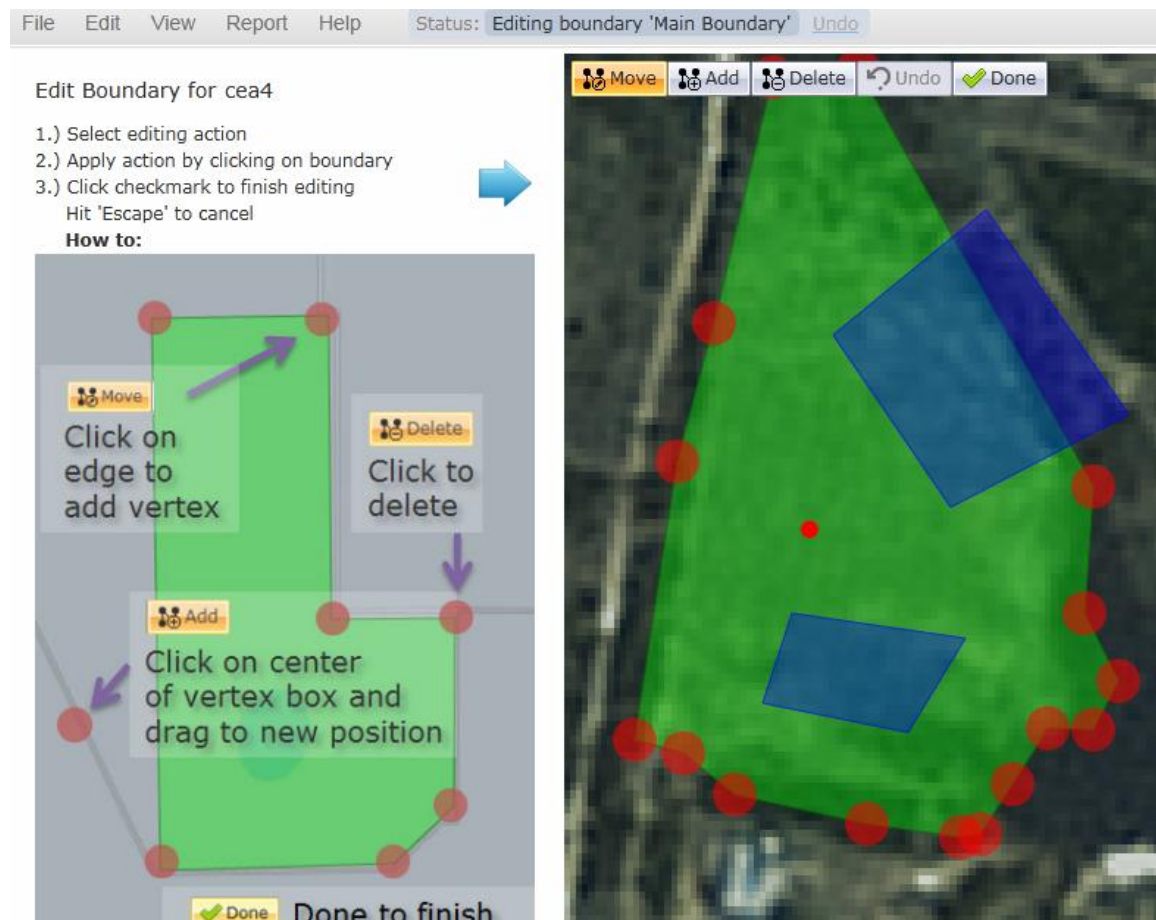
1) Edit Main boundary

This option activates a menu at the top of the window from which you can move, add or delete individually vertices on the boundary to change its shape.

Press done to save the edits, escape to cancel or undo to reverse the action.

When :done” the size in hectares of the CEA Main boundary, exclusions (amount of overlap with the main boundary) and Net area (main boundary minus the sum of all exclusions) will be automatically updated in the list.

Note if at the end of editing a model point falls outside the main boundary or in an exclusion it will automatically be removed and its location will have to be redefined.



2) Move Main boundary

This option enables the entire main boundary(green) to be dragged to a new location independently of the exclusions and model point.

When dragging objects across the screen, move the mouse slowly so the object can track with the mouse and does not get “dropped”.

When :done” the size in hectares of the CEA Main boundary, exclusions (amount of overlap with the main boundary) and Net area (main boundary minus the sum of all exclusions) will be automatically updated in the list.

Note if at the end of moving a model point falls outside the main boundary or in an exclusion it will automatically be removed and its location will have to be redefined.

3) Delete Main boundary

When this option is chosen, the entire CEA main boundary, associated exclusions and model point are removed. Click undo from the status bar at the top of the window to reverse this action.

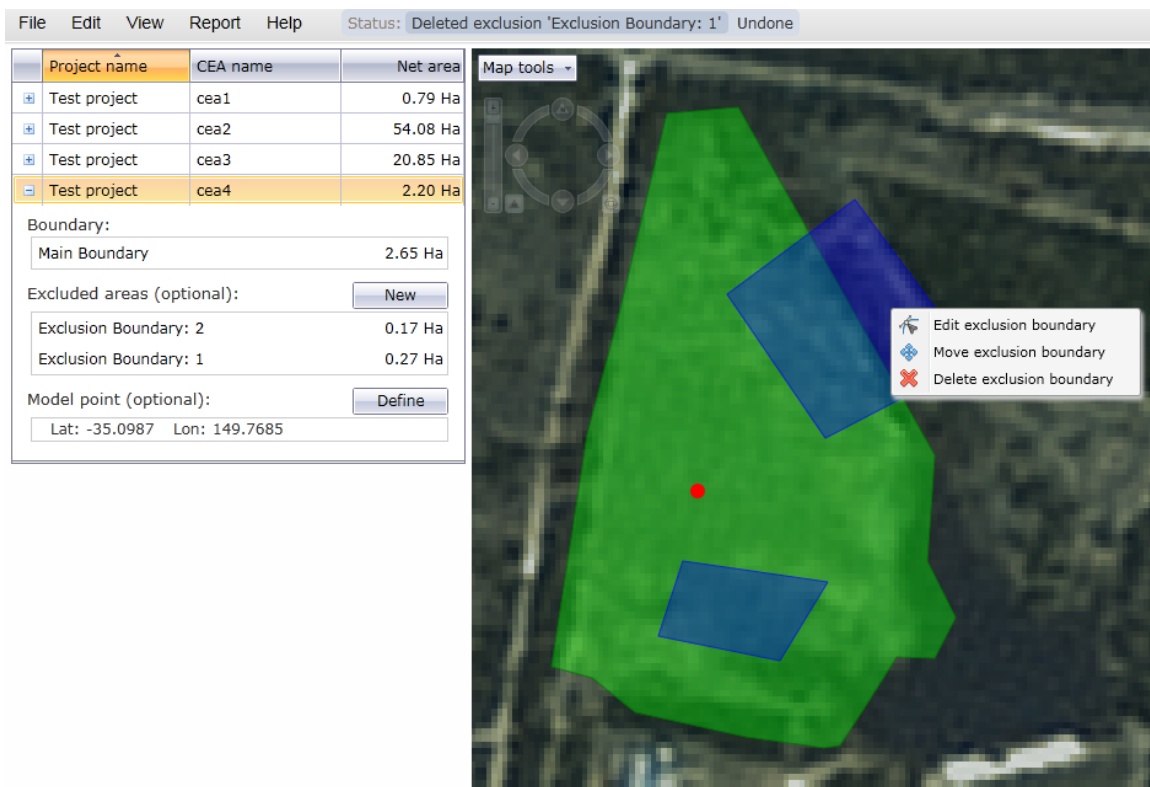
The CEA will still be present in the list but its net area will be 0 ha and you will be presented with the New boundary button to create a new main boundary for that CEA.

If, after deleting the main boundary from the map, you also wish to remove the CEA from the list entirely, select Edit / Delete CEA(s) from the top menu and check the box next to the relevant CEA followed by the delete CEAs button at the bottom of the dialogue box.

How do I ...

Edit an Exclusion?

The options and controls for editing an exclusion are the same as those for editing the main boundary as described in “How do I edit a boundary”.



Note that if at the end of editing an exclusion, the model point falls outside the main boundary or inside an exclusion, it will automatically be removed and its location will have to be redefined.

How do I ...

Change a Model Point?

Once a model point has been added, it can be changed by pressing the define button again and clicking the mouse on the map in the new desired location. The initial point will be removed and the new point will be shown. The longitude and latitude will also be updated to reflect the new location of the model point.

The same rules apply as for adding a model point. The new point must lie within a main boundary and not be within an exclusion.

How do I ...

Delete a Boundary?

A boundary can be deleted in two ways:

1) Main menu Edit/ Delete CEA(s)

This will delete the whole CEA from both the list and map including the main boundary and any exclusions and model point

2) Right click inside the main boundary and choose Delete main boundary.

This will delete the whole CEA from the map including the main boundary and any exclusions and model point, however the record will remain in the list and a new boundary for this CEA can then be added.

How do I ...

Delete an Exclusion?

Exclusions are deleted by right clicking inside the blue exclusion area on the map and choosing to delete exclusion boundary.

How do I ...

Delete a Model Point?

Once placed, a model point can only be changed see note s under “How do I Change a Model Point”. To delete the point entirely, the entire CEA must be deleted and redrawn.

How do I ...

Move a Model Point?

See notes under “How do I change a Model Point?”

How do I ...

Move a Boundary ?

See notes under “How do I Edit a Boundary?”

How do I ...

Move an Exclusion?

See notes under “How do I Edit an Exclusion?”

Managing one or more Carbon Estimation Areas:

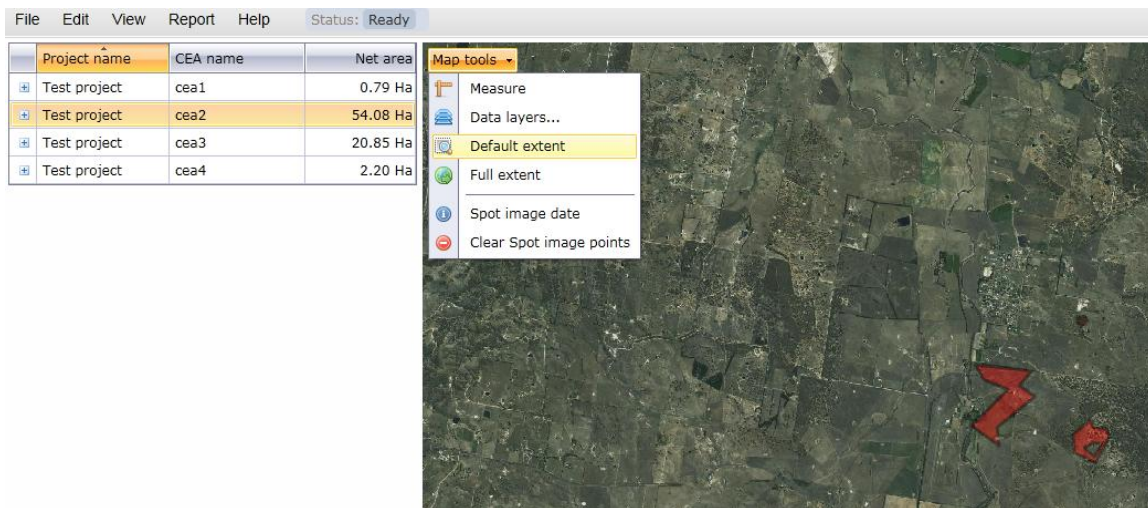
How do I ...

See more data?

How do I ...

View multiple CEAs?

Left mouse clicking on a single CEA in the list will highlight the CEA on the map and zoom to its location. To view all the CEAs in the list on the map, use the MapTools and select the Default extent. The map will then zoom to the extent of the all the CEAs in the last saved shapefile.

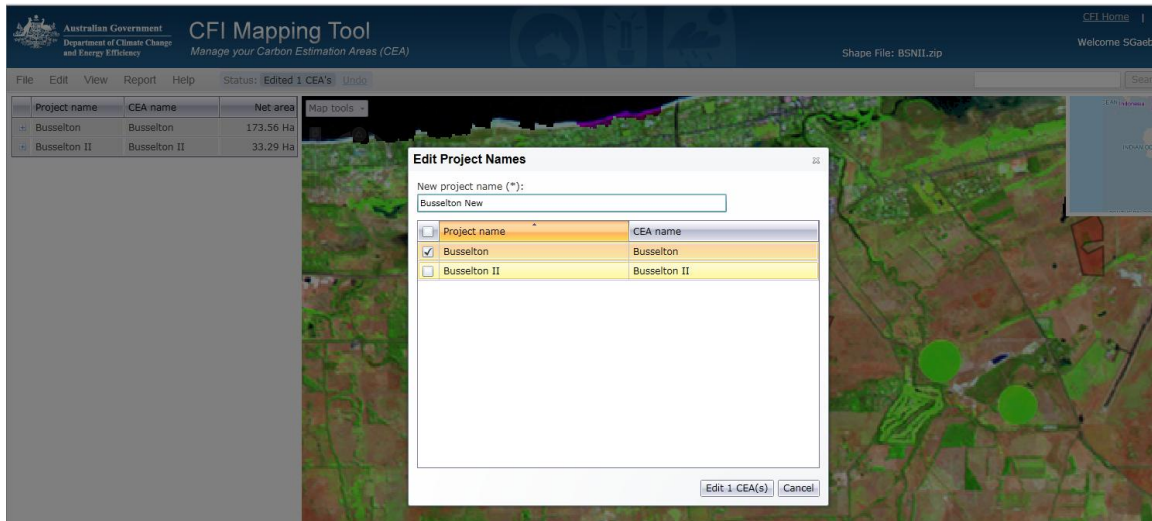


If you cannot see recently added CEAs after using the Default extent, save the records first then try again.

How do I ...

Edit project names?

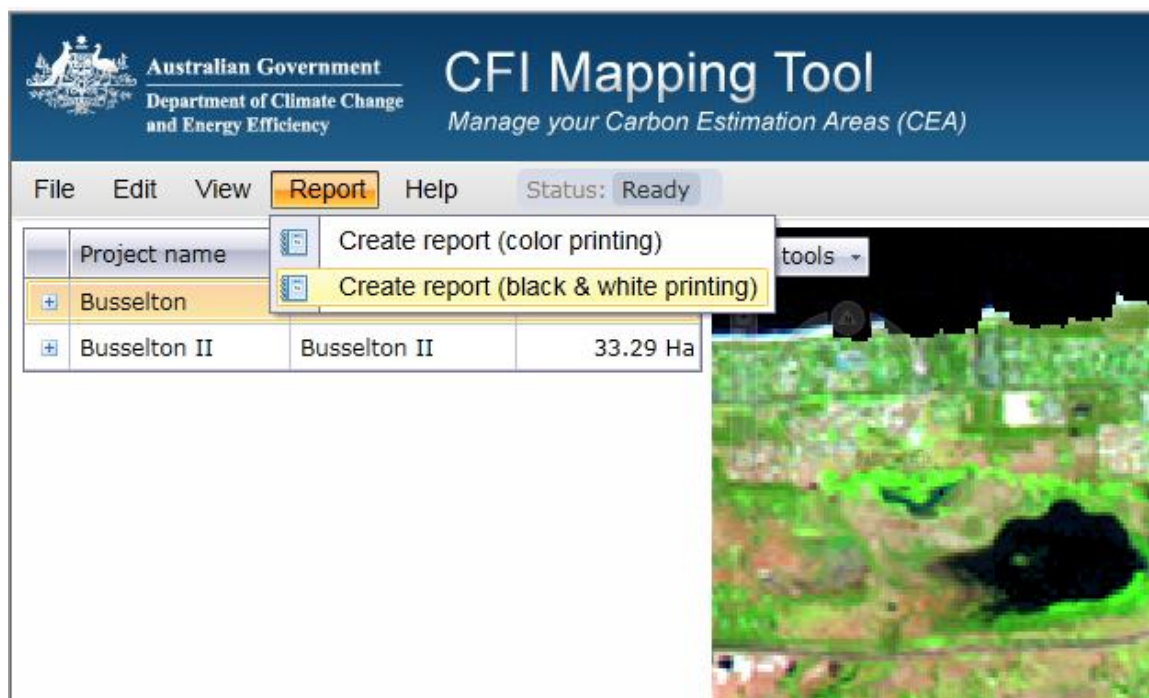
Right click on Edit then click on Edit project name(s) from the drop down. Select the project that you wish to edit the name of by checking the selection box at the left. Type the new name in the New project name box. Click on Edit 1 CEA(s).



How do I ...

Create a Report?

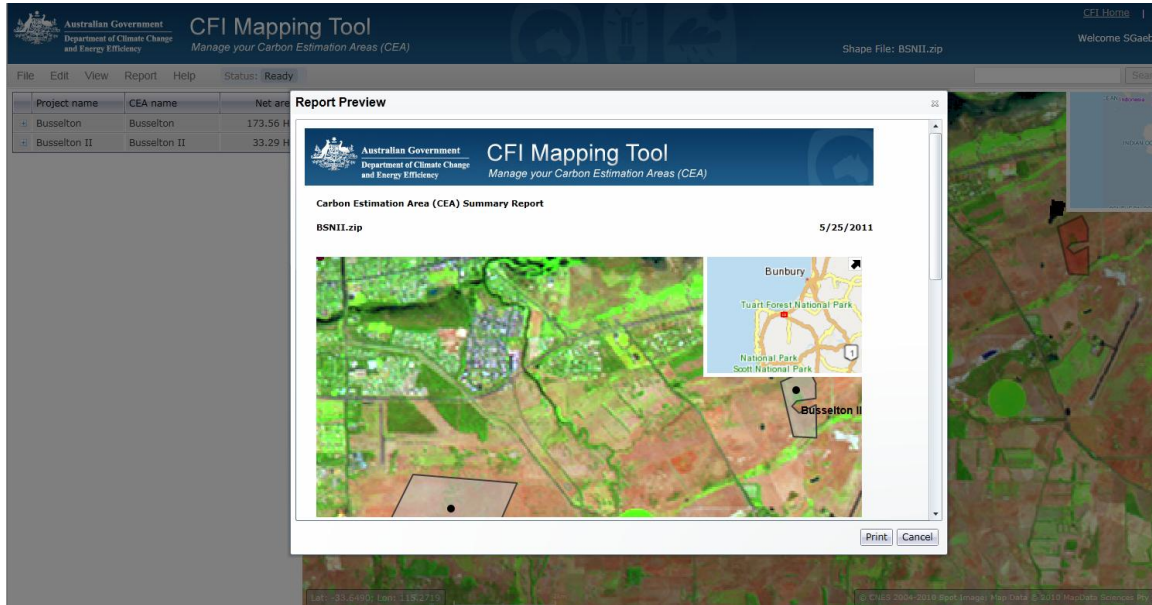
Right click on Report. From the drop down menu select Create report (black and white printing) or Create report (colour printing).



How do I

Save/print my report?

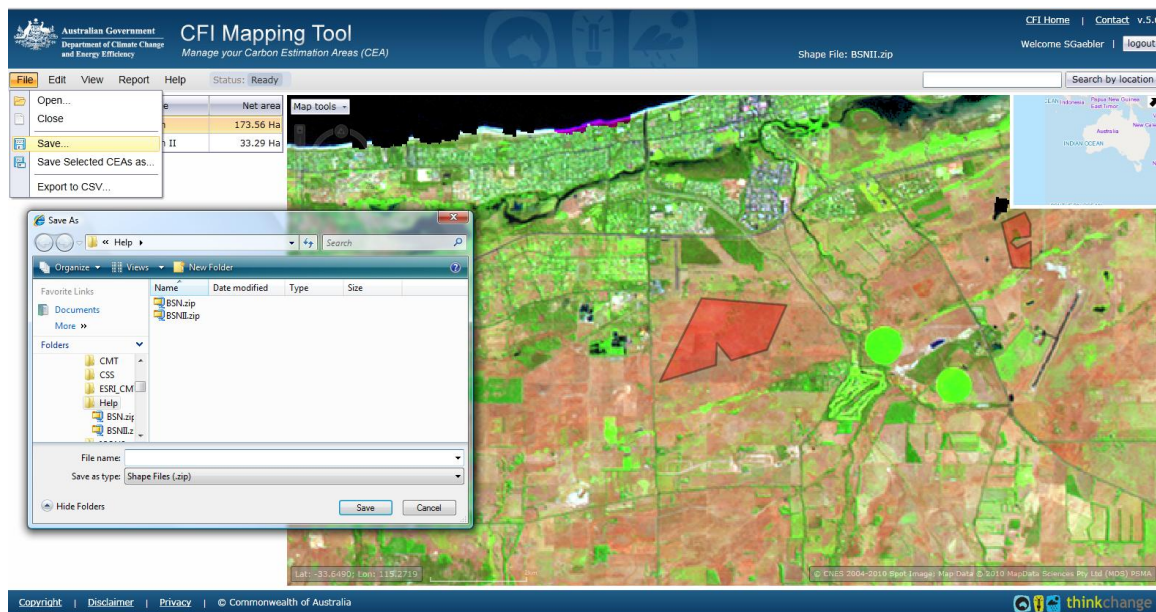
Click on Print to print the report, selecting Create report (colour printing) or Create report (black & white printing). The colour printing option prints all selected imagery. Select the printer to print the report. To save the report, select the pdf printer option from the printer selection list. Select the file name and location where the report is to be saved. A pdf printer driver can be downloaded from <http://sourceforge.net/projects/pdfcreator/>



How do I ...

Save my current file?

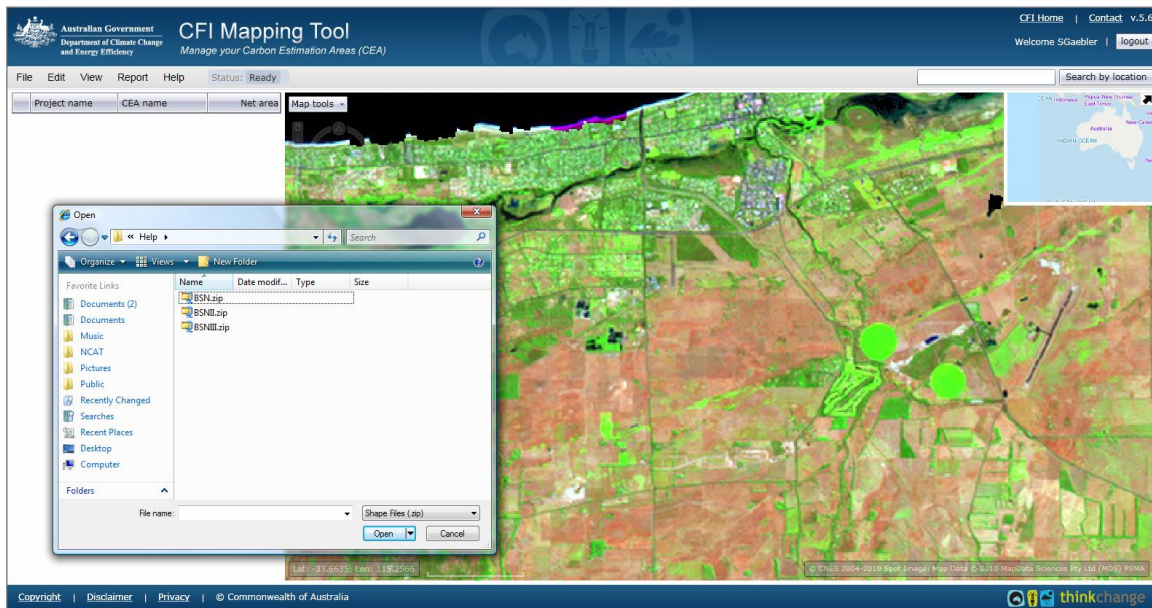
Click on File. From the drop down menu select save and type the file name and select the location to save the file in the dialog box.



How do I ...

Open a previous file?

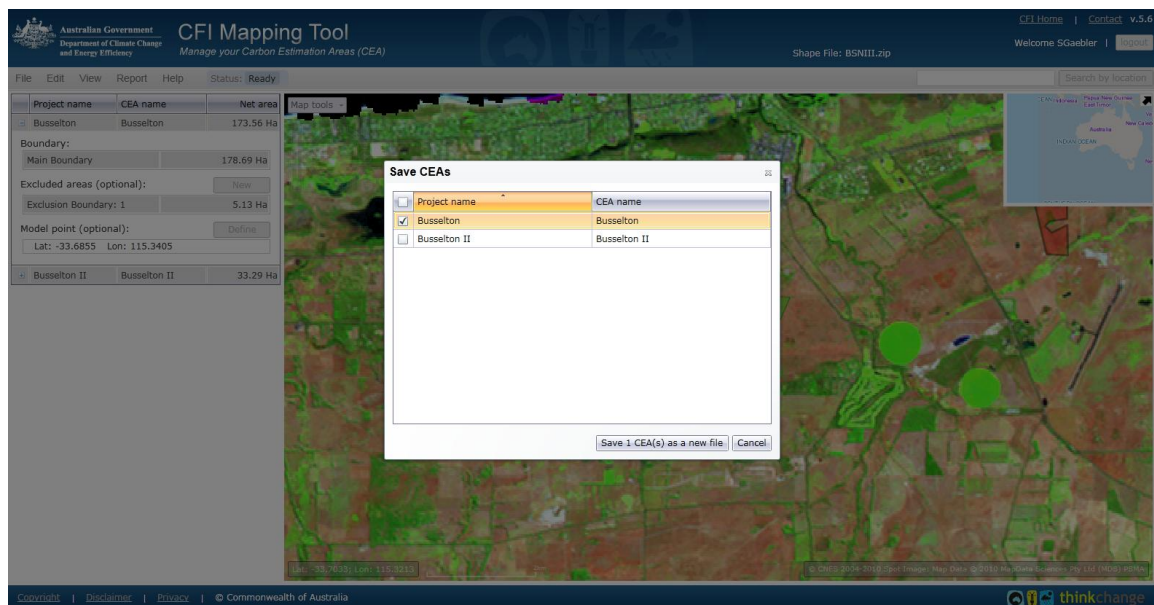
Click on File. From the drop down menu select open and browse to the location and file this is to be opened. Click on Open.



How do I ...

Save only a selected number of records?

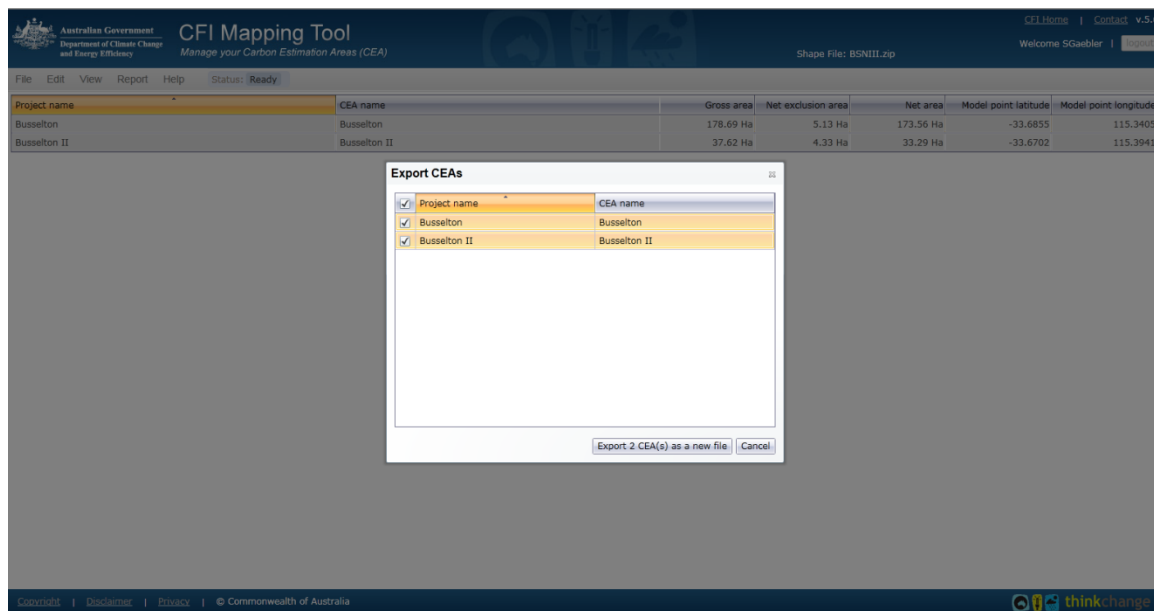
Click on File. From the drop down menu select Save selected CEAs as. Select the required CEAs in the selection boxes to the left. Click Save n CEA(s) as a new file. Type the file name and select the location to save the file in the dialog box.



How do I

Export my data to CSV?

Click on File. From the drop down menu select Export to CSV. Select the CEAs to be exported. as. Select the required CEAs in the selection boxes to the left. Click Export on CEA(s) as a new file. Type the file name and select the location to save the file in the dialog box.

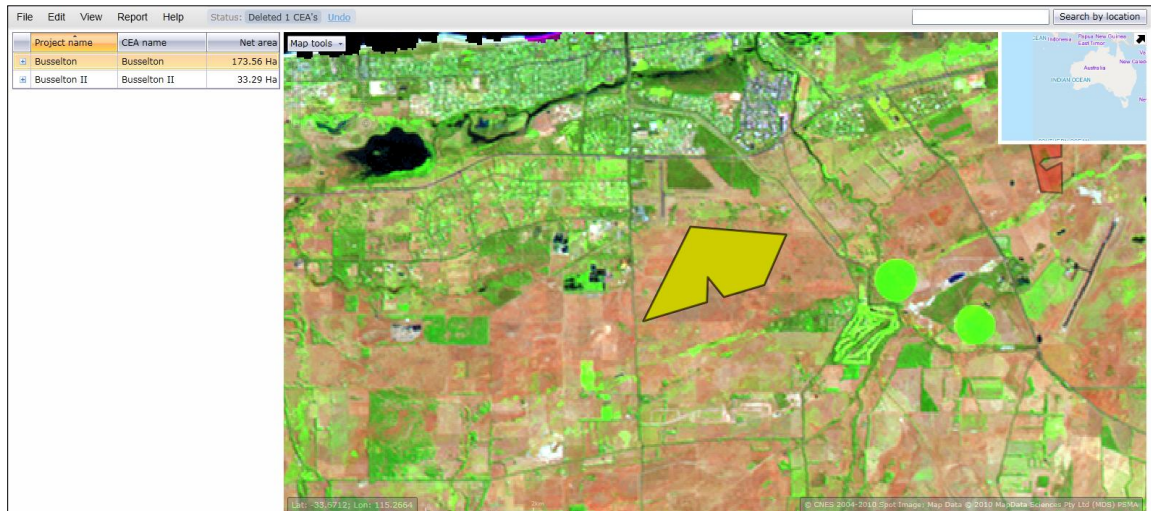


General actions:

How do I ...

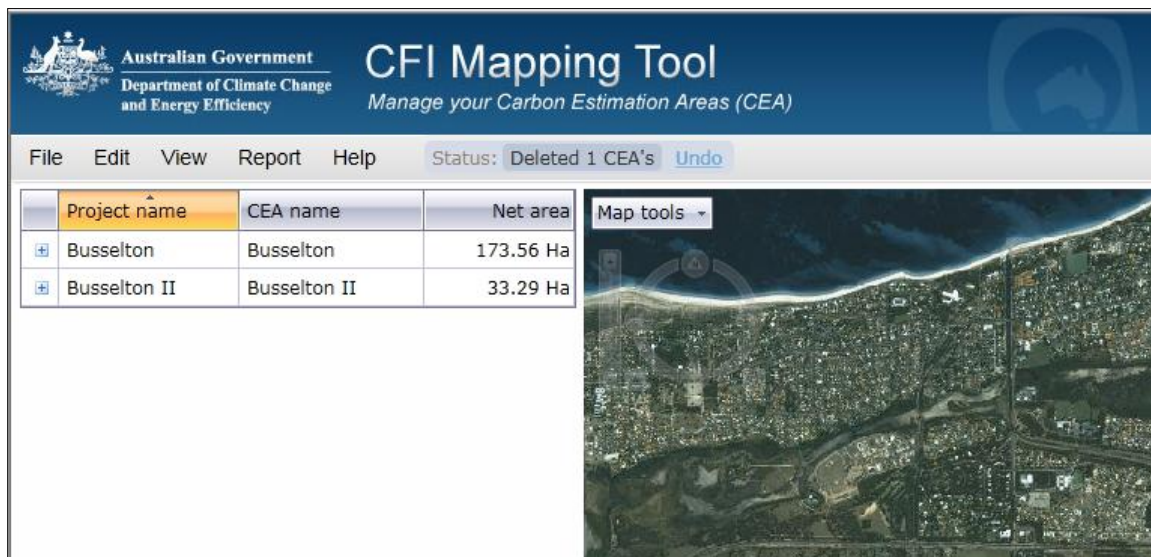
Locate a specific CEA on the map?

Hover over the CEA with the mouse and the specific CEA will change from red to yellow.



Undo a change?

To undo a change, click on the undo button. This will undo the last action.



Data management:

What is isolated storage?

Isolated Storage is a virtual file system used to store data in a hidden folder on your machine. It breaks up the data into two separate sections: Section #1 contains administrative information such as disk quota and section #2 contains the actual data.

What happens to my data if I lose my internet connection?

Data is stored in Isolated Storage. When the CFI Mapping Tool is restarted there will be a prompt to recover unsaved data. Click on yes and unsaved data will be recovered.



Where is the data kept? (How is the data stored)?

The data is kept in a hidden folder on your machine.

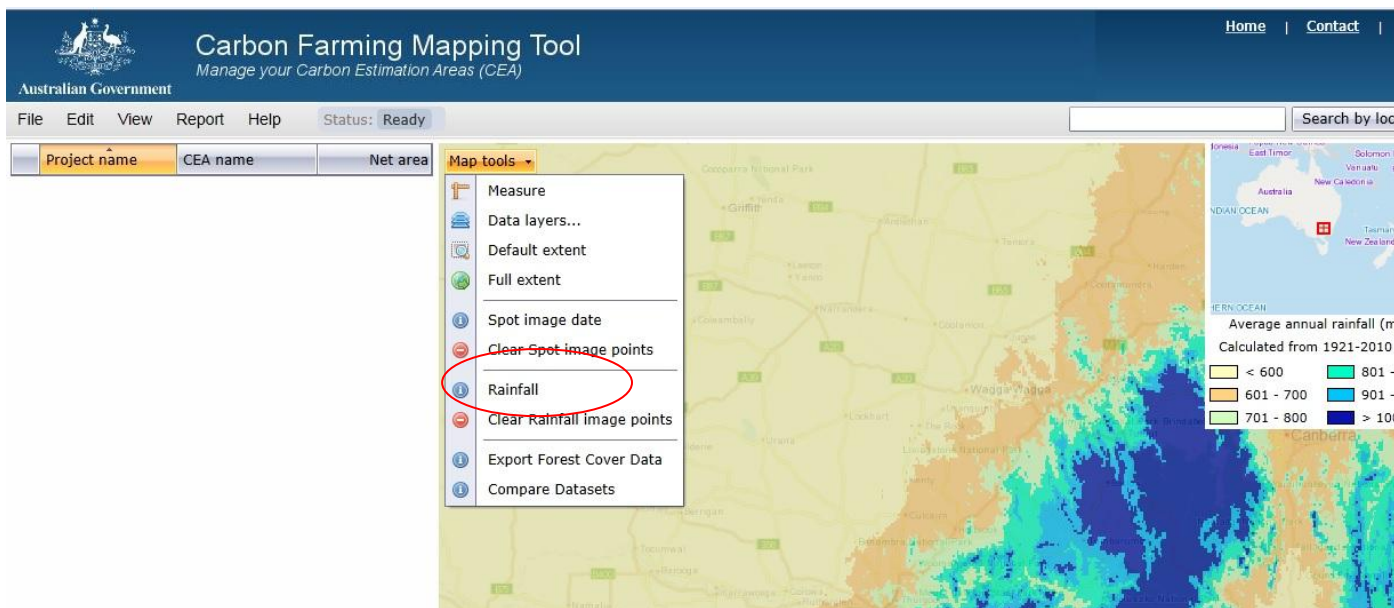
CFI rainfall map

How to query the CFI rainfall data layer?

Click **Map Tools**.

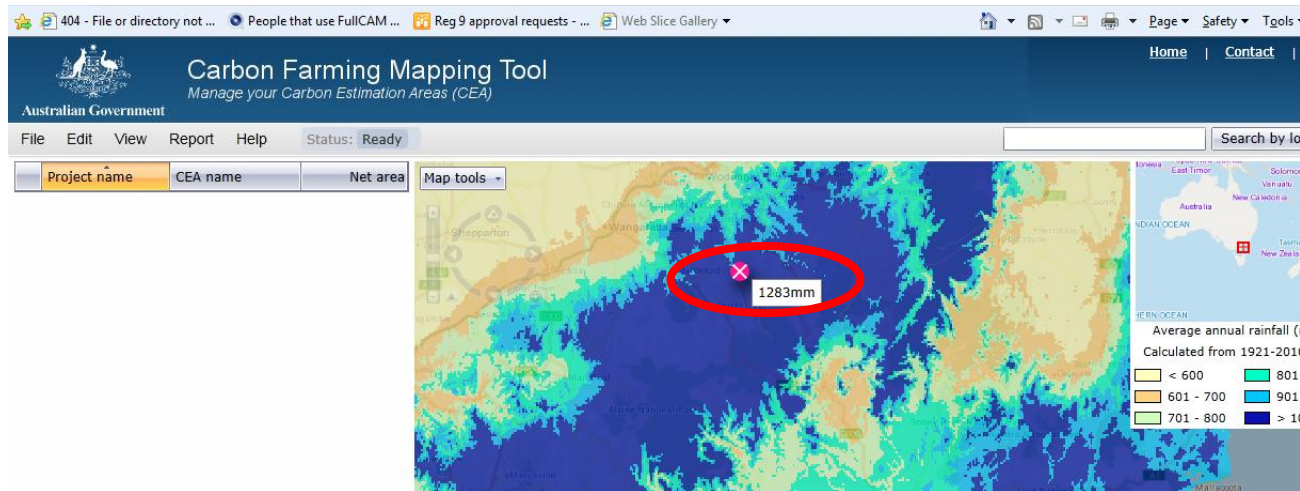
From the drop down menu select **Data Layers....**

Select Avg. Annual rainfall (1921-2010) layer. Click “OK”



Click **Map Tools** again.

From the drop down menu select “**Rainfall**” and click on any location in the map.
The average annual rainfall value is displayed on the screen as shown below.



The rainfall point data displayed on the screen can be removed by clicking on the “**Clear Rainfall image points**” option within the **Map Tools** drop down list.

Similar functionality exists to query Spot image date of acquisition.

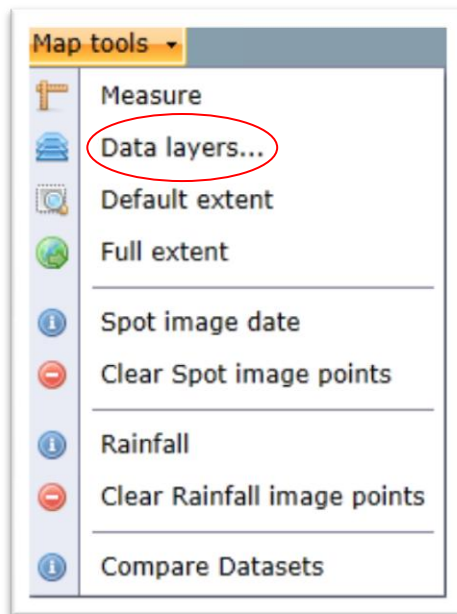
Adding additional Forest Extent and Landsat Data Layers

Description

The CFI Mapping Tool version V6.01, released on 5 August 2014, contains 30 additional layers of Landsat and Forest Cover datasets for the period from 1990 to 2013. Additional layers will be added as new data is created from 2014 onwards. To select and display these additional layers for display in the CFI Mapping Tool, the existing Data Layers dialog has been modified as described below.

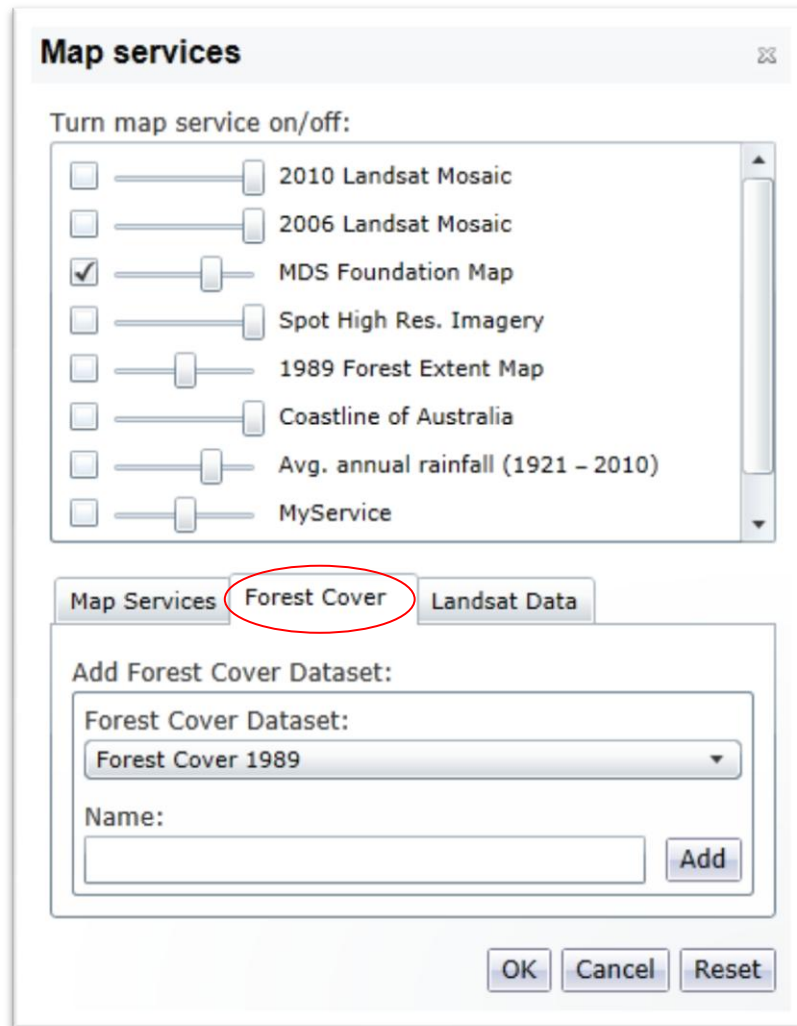
Adding Forest Cover Map Services

1. To add a new Forest Cover map service to Data Layers list select the **Map Tools** menu then select **Data Layers...**



This will display the Map Services dialog.

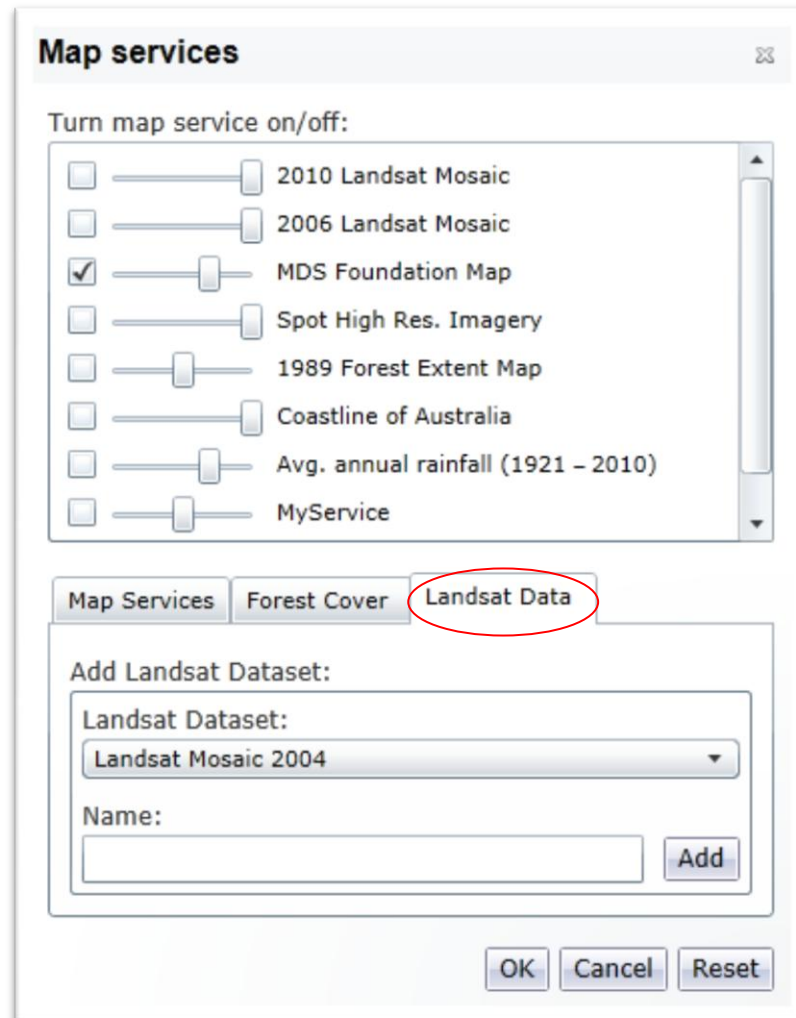
2. Click the Forest Cover tab. This will display a drop down list of available Forest Cover map services.



3. Select the map service you wish to add from the drop down list.
4. Provide a name that you want to appear in the list for this layer in the **Name** field.
5. Click **Add** to add that service to the list of services that can appear on the map.
The service will appear in the list with the visibility turned off and Opacity set at 50%. This can now be adjusted make it appear how you would like on the map.
6. Click OK to close the Map Services dialog.

Adding Landsat Map Services

1. To add a new Landsat map service to Data Layers list select the **Map Tools** menu then select **Data Layers...**
2. Click the **Landsat Data** tab. This will display a drop down list containing the list of available Landsat map services.



3. Select the Landsat service you wish to add from the drop down list.
4. Provide a name that you want to appear in the list for this layer in the **Name** field.
5. Click **Add** to add that service to the list of services that can appear on the map.
The service will appear in the list with the visibility turned off and Opacity set at 50%. This can now be adjusted make it appear how you would like on the map.
6. Click OK to close the Map Services dialog.

Removing the Added Layers

1. To remove the added layers from the Data Layers list select the **Map Tools** menu then select **Data Layers...**

2. Select the **Reset** button to reset the list to the default layers.
3. Select the **OK** button to close the dialog

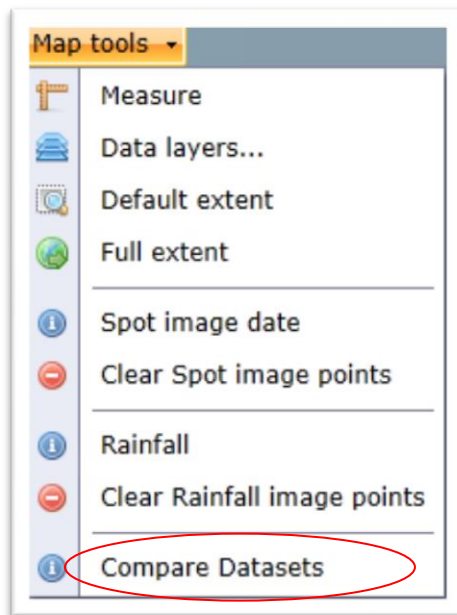
Compare Datasets

Description

The application offers a new swipe tool which allows users to interactively compare two images from different years and sources. This is achieved by adding a moveable bar to the map screen that can be dragged back and forth revealing more of one image and concealing more of the other. The opacity of each image can be adjusted to allow more of one image to be seen through the other.

Using the Compare Datasets Tool

1. To start the compare datasets tool select the **Map Tools** menu then select **Compare Datasets**



2. This will display the Compare Datasets floating window and draw a red bar in the centre of the map window.

The Compare Datasets window allows you to choose any two forest cover or Landsat datasets you wish to compare and the opacity at which they will be displayed. This dialog can be left open to allow you to experiment with combinations of datasets and opacities.

The drop down and slider controls on the left side of the window control the image that appears on the left of the red bar and the drop down and slider on the right affect the image that appears on the right of the red bar.

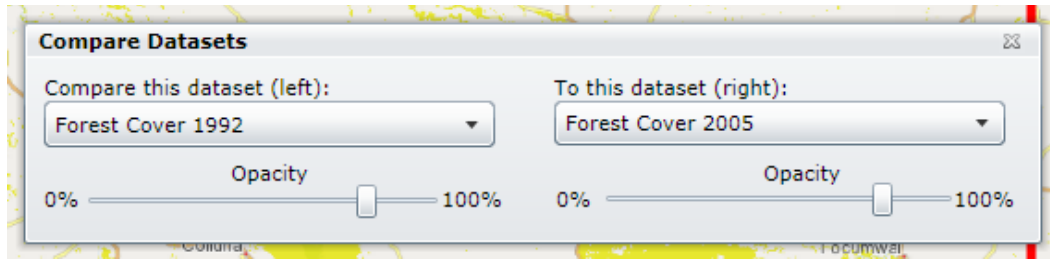
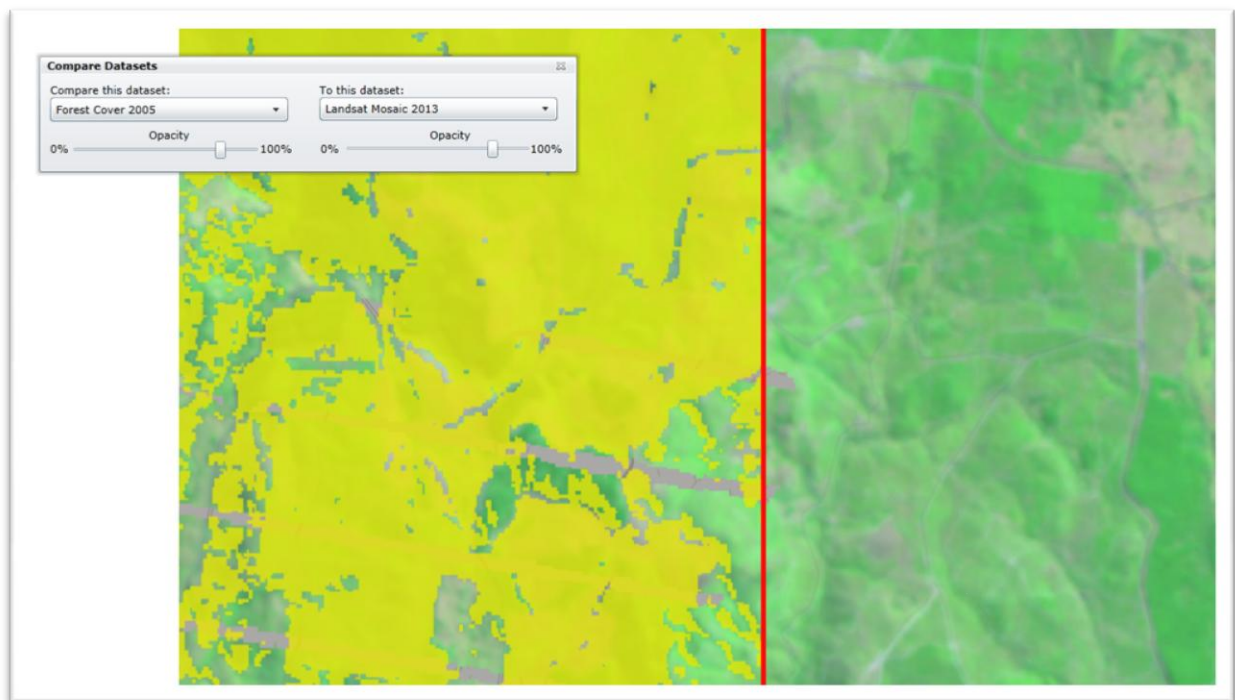


Figure 1. Compare Dataset Window

3. To start comparing the two datasets zoom to an area of interest and then select the red bar and drag it left or right. As you move to the right it will reveal more of the data on the left hand side, correspondingly as you move it to the left it will display more of the data on the right hand side.



4. To close the Compare Datasets Tool, close the Compare Datasets window. This will remove the swipe bar and the two datasets from the map display. The settings used are saved and will be restored the next time the Compare Datasets Tool is opened.

Import a Shapefile

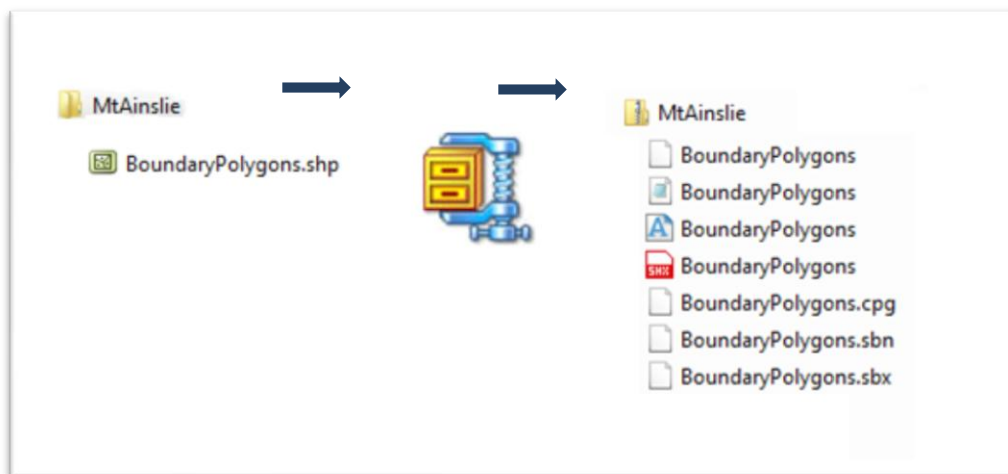
Description

The import CEA functionality allows you to create CEA boundaries from shapefile data that you have created in external applications e.g. GIS, GPS or CAD.

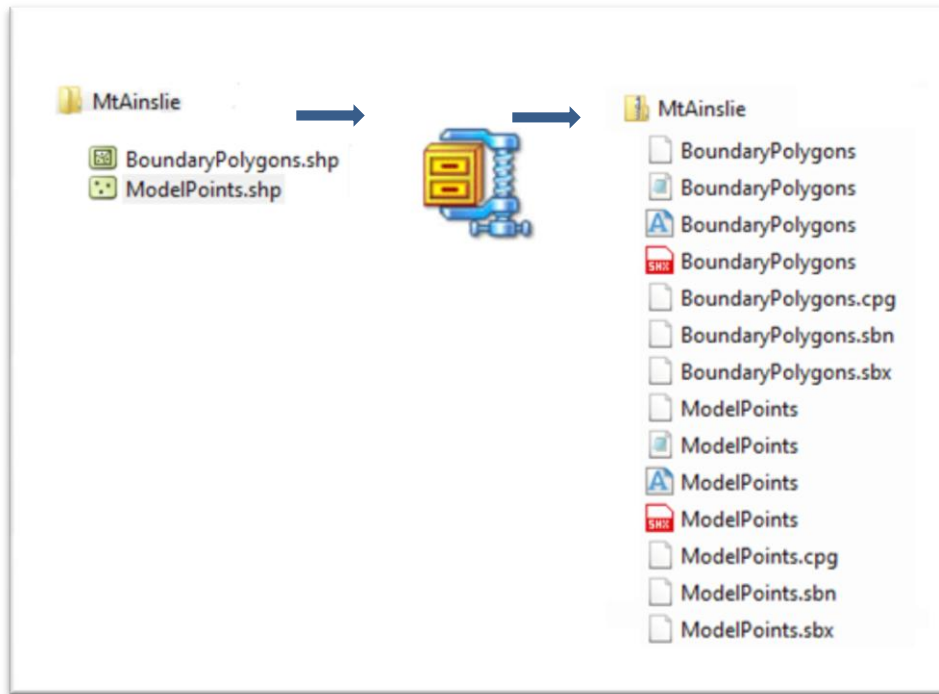
Data Preparation

To prepare your shapefiles for importing into the CFI Mapping Tool, archive them into a .zip file. The .zip file must contain a polygon shapefile and can optionally contain a point shapefile. If it only contains a polygon shapefile, those geometries will be imported as CEA Boundaries and the application will create model points at the geometric centre of each polygon. Otherwise if the .zip file contains a point shapefile, those geometries will be used to create the model points for each spatially corresponding polygon.

The name of the shapefile is ignored once it is in .zip file as the program only looks for the geometry type inside the file.



Example of shapefile archive containing only polygon geometry



Example of shapefile archive contain point and polygon geometry

Limitations

There are limitations and restrictions on the shapefile data that can be imported.

Attributes

The shapefile import function only uses the geometry of the shapefile. Any attribute information is ignored. It is important to be aware of this when it comes saving the imported CEAs as a project. If you save over the original archived shapefiles you imported, it will overwrite the original attribute information in those zip files with the CEA data records information. Your original shapefiles used to create the .zip file will be untouched however.

Size

There is a limit imposed on the size of the shapefile that can be imported. The size of the shapefile when extracted must be less than the amount of disk space allocated to the CFI Mapping Tool. This has been set at 25MB.

Projection

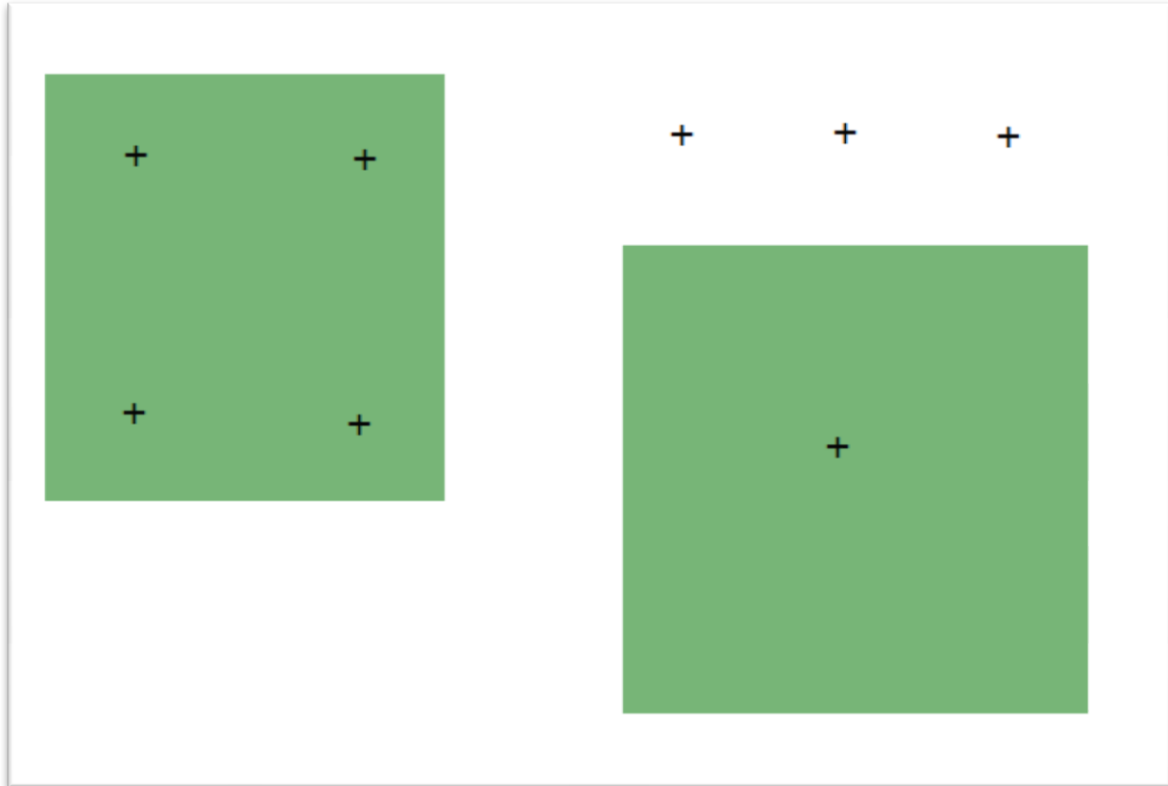
The shapefiles must be in geographic GDA94 projection. If the archive contains two shapefiles, they must both have the same projection.

Geometry

Only point and polygon geometries are supported.

Model Points

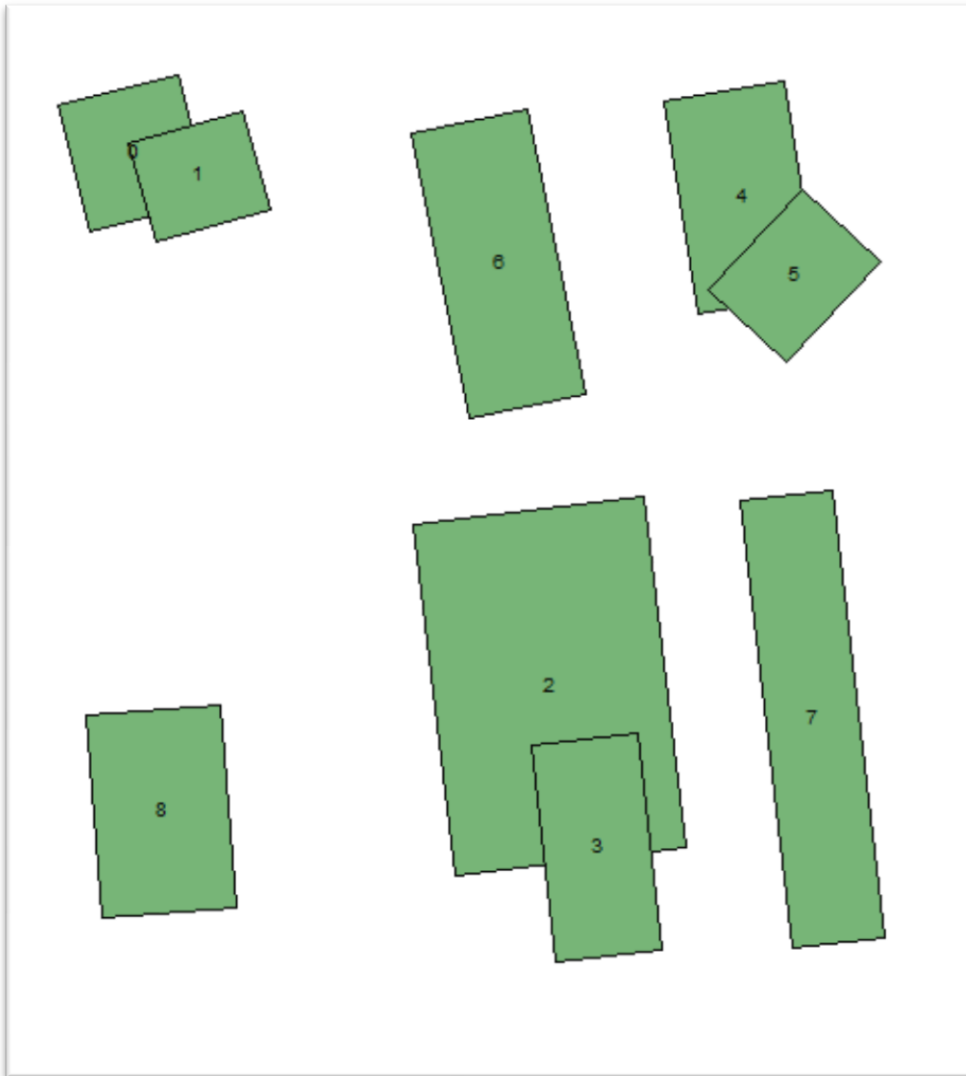
If model points are provided, there must be only one model point per polygon (no duplicates) and each model point should be spatially within a polygon (no orphans). During the import process you will be informed if points not matching these conditions are detected and given the option to cancel your import.



Orphan and Duplicate Model Points will be deleted while importing

Overlapping Polygons

If the polygon shapefile contains polygons which partially overlap, those polygons will not be imported. If this situation is encountered during the import, you will be notified and given the option to cancel your import. Polygons which are completely within another polygon will be treated as exclusions to the main CEA boundary.



Examples of overlapping polygons - Polygons 6, 7 and 8 will be imported

Project Structure

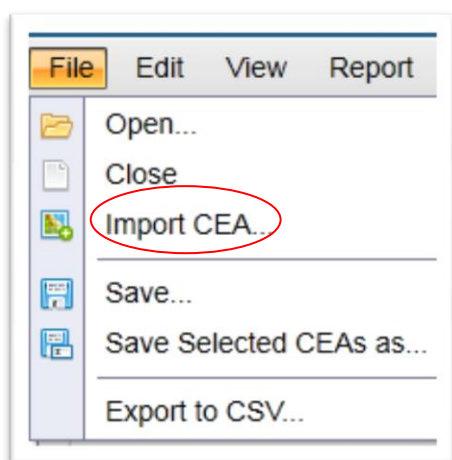
All polygons imported will belong to the same project. The name of the project is supplied at the beginning of the import process. Each polygon will be given a generated CEA name in the form CEA1 CEA2 etc.

	Project name	CEA name	Net area
	MyProject	CEA1	427.00 Ha
Boundary: <div> <div>Main Boundary</div> <div>427.00 Ha</div> </div>			
Excluded areas (optional): <div>New</div>			
<div>Click 'New' above to add an excluded area.</div>			
Model point (optional): <div>Define</div>			
<div>Lat: -35.2916 Lon: 149.1153</div>			
	MyProject	CEA2	405.54 Ha
	MyProject	CEA3	433.20 Ha
	MyProject	CEA4	353.10 Ha

Example of Project Structure with four CEAs

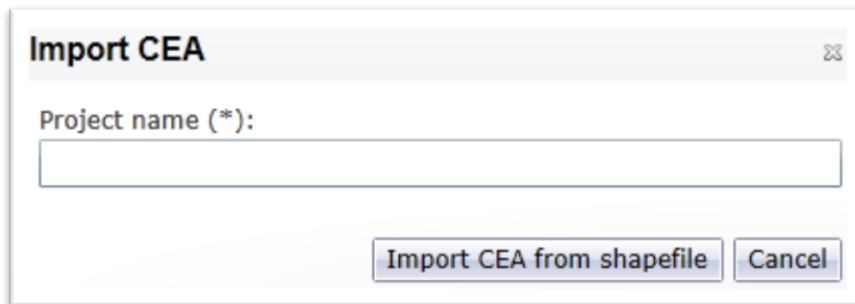
Steps to import a shapefile

1. Once your data is prepared and in a .zip file, it can be imported into the CFI Mapping Tool from the **File** menu -> **Import CEA** submenu.

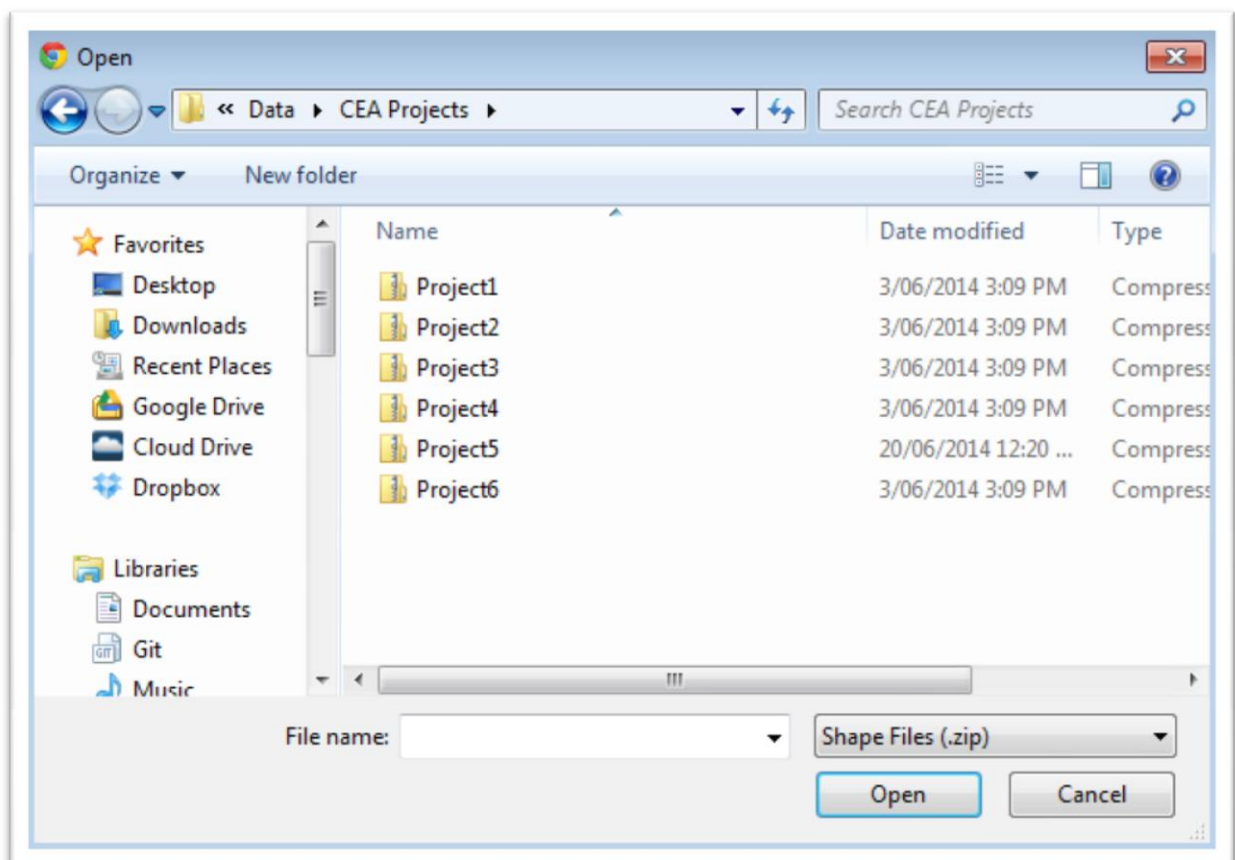


File Menu

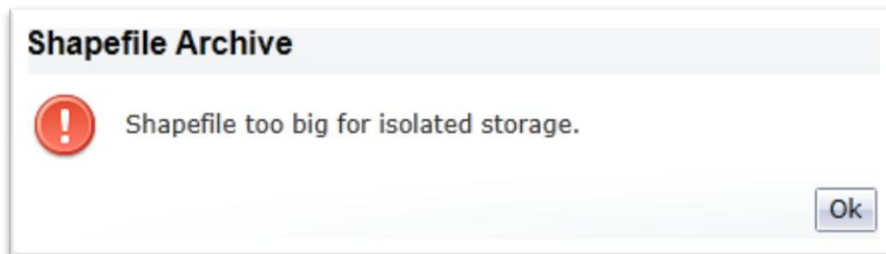
2. This will present the Import CEA dialog. Enter the name of the project that the shapefile will be imported into. Then click on the **Import CEA from shapefile** button.



3. This will present the Open File Dialog. Browse to the .zip archive containing the shapefiles that are to be imported and select the file. Select **Open**.



4. The program will analyse the data for any errors that prevent it from being imported. If any errors are encountered you will see an error dialog. Click **Ok** to close the window.



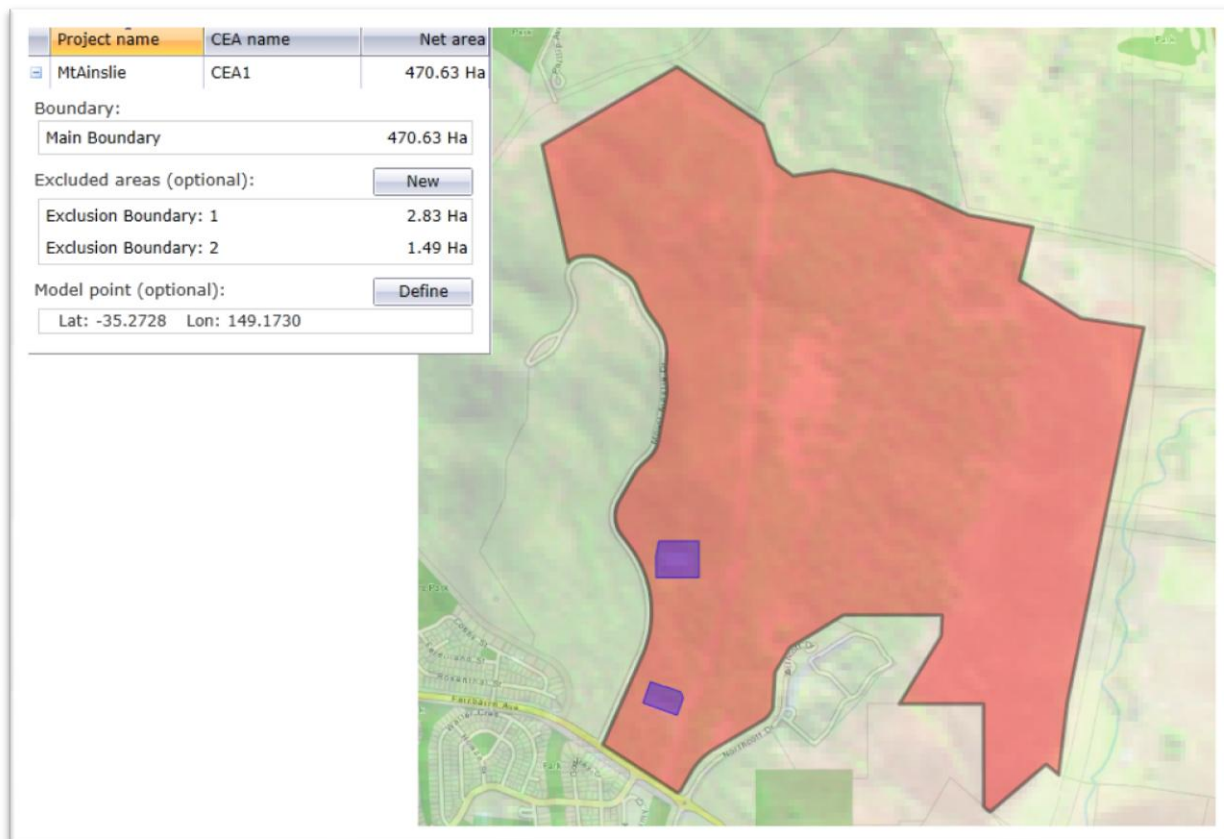
Example Error Window

5. The program will analyse the data from any geometries that cannot be imported. If any geometries are encountered you will see a warning window. If you want to continue the import without importing the affected geometries select **Ok**, otherwise select **Cancel** to stop the import.



Example Warning Window

6. When imported the map will be centred on the imported geometries and the CEA boundaries will be listed in the project table.



Example of imported shapefile with project table

The project can now be saved as a CEA .zip project from the File menu and further edited using the CEA editing tools if required.

Errors

This section describes potential errors encountered during importing a shapefile and gives some solutions.

Spatial Reference Error

This error appears when the spatial reference of the shapefile is undefined or not in GDA94 projection.

Solution: Define a spatial reference of reproject the shapefiles

Empty Shapefile Error

This error appears when the archive does not contain a shapefile.

Solution: Check the contents of the .zip file.

Shapefile Too Large Error

This error appears when the shapefile is too large to fit in the disk space allocated for the CFI Mapping Tool (25MB).

Solution: Review the data that is being imported to see if it can be reduced in size.

Incorrect Geometry Error

This error appears when there is no polygon shapefile in the .zip file

Solution: Check the contents of the .zip archive to ensure it contains at least one polygon shapefile.

No Shapefile Error

This error occurs when the .zip file does not contain any shapefile

Solution: Review the contents of the .zip file to ensure it contains at least one polygon shapefile.

Extract Forest Cover Data Tool

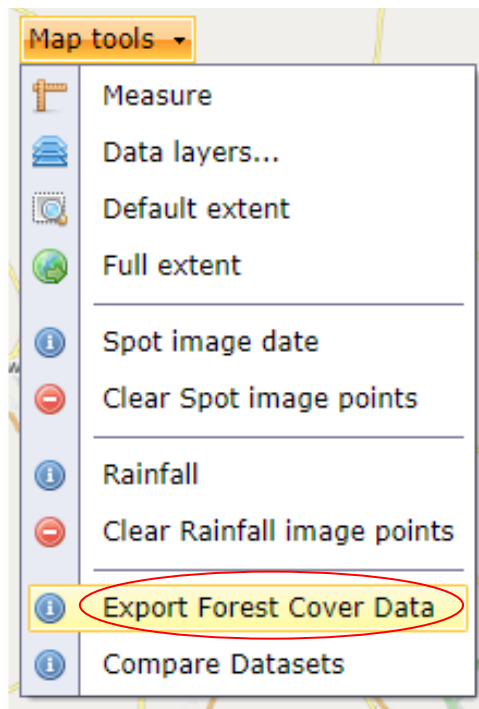
Description

The Extract Forest Cover Data tool provides the ability to select and download a batch of Forest Cover datasets (organised as tiles) representing a specified area for any number of available years.

Operating separately to the CFI Mapping tool itself, this tool permits the selection of Mosaic Tiles to be collated (in GeoTIFF Format with full GIS metadata) and compressed for download. The resulting download represents the same raw data utilized at the server to provide the Forest Cover layers utilised within the CMT.

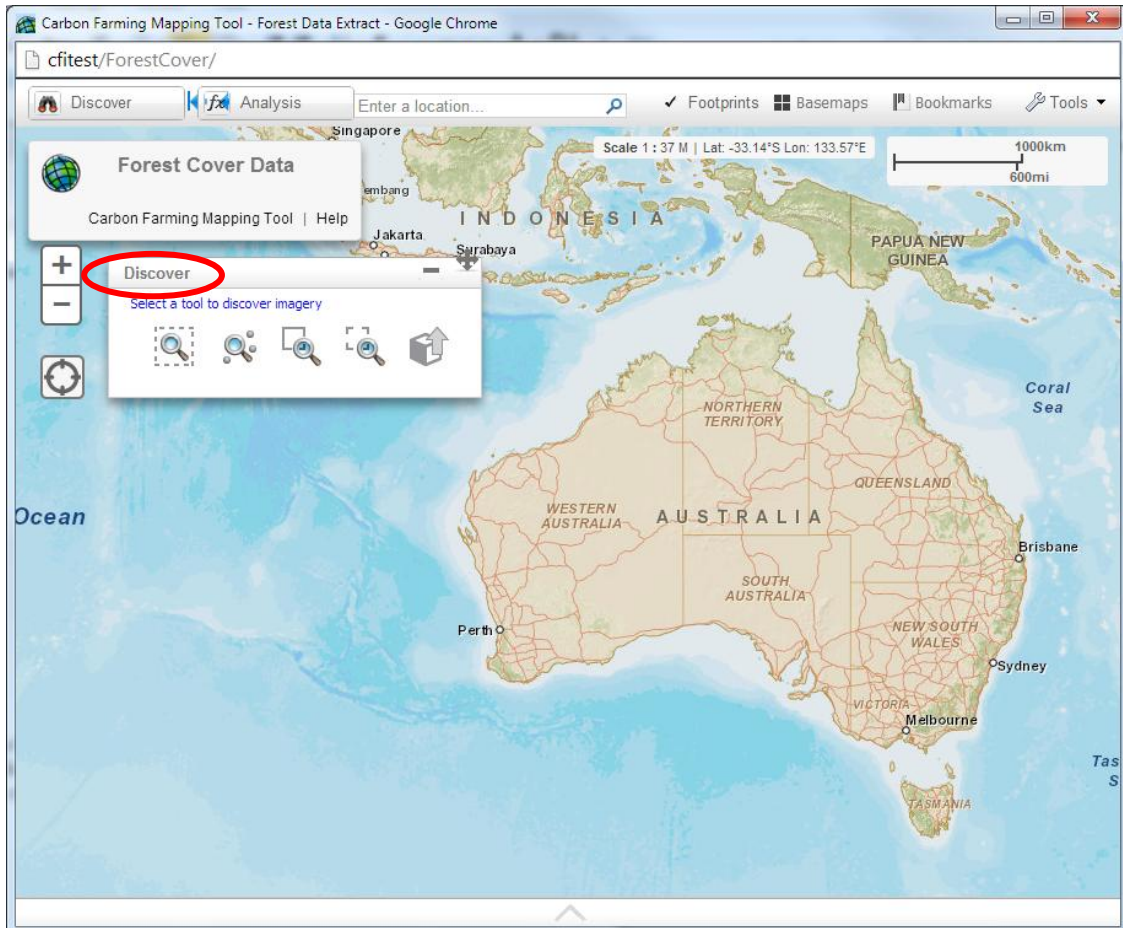
Using the Extract Forest Cover Data Tool

1. To start the Extract Forest Cover Data tool select the **Map Tools** menu then select **Export Forest Cover Data**



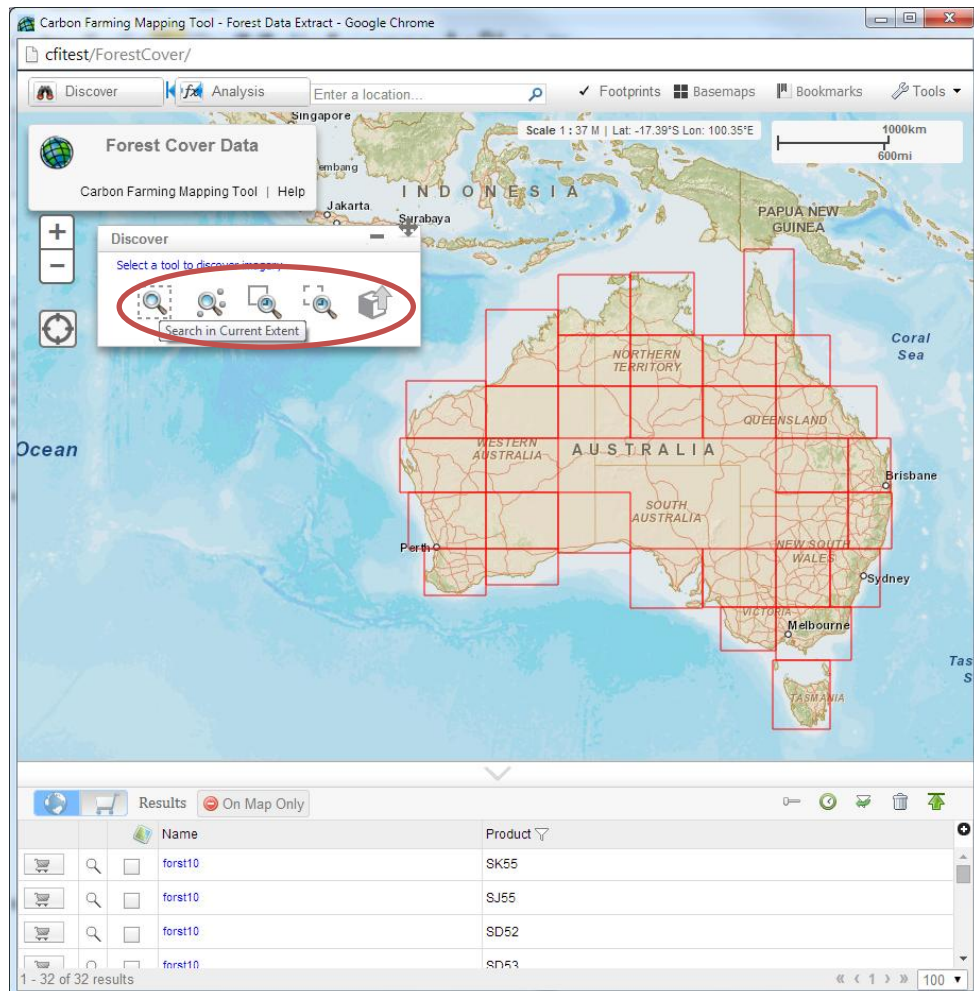
Map Tool Menu

2. Once selected from the Map Tools menu, a new window containing the Extract Forest Cover Data application will be displayed. The application will present an initial dialog entitled “**Discover**” which exposes the image discovery tools to the user. Select a tool (e.g. by clicking on one of the lens) to discover imagery.



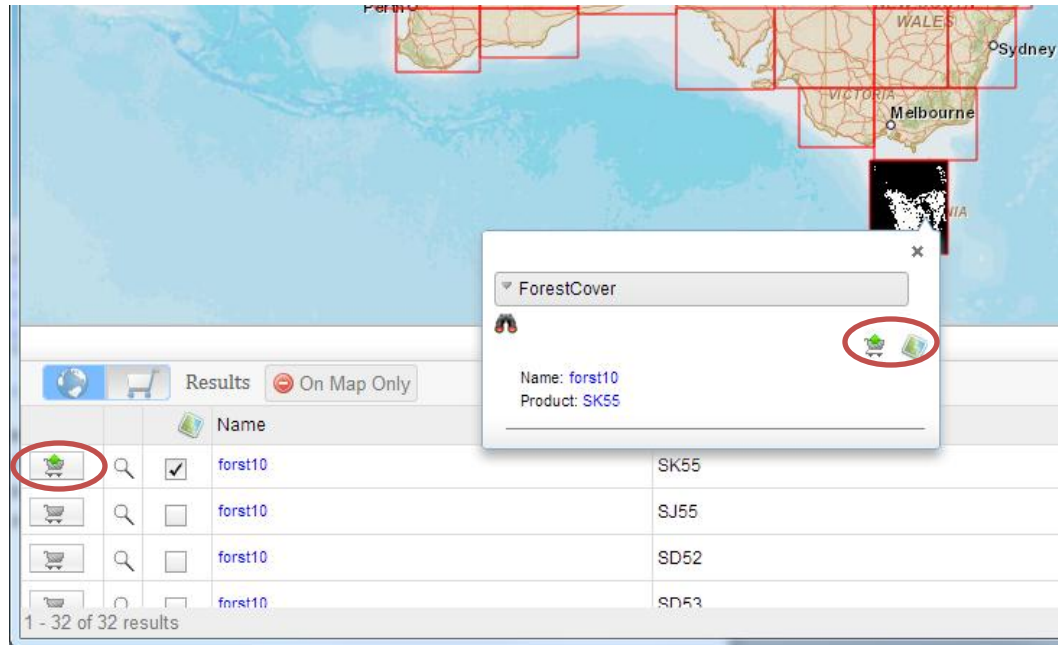
Extract Forest Cover Data application window

3. Select a method of searching for Forest Cover Tiles from the “Discover Imagery” tool. Searching can be performed for the entire visible extent, a drawn visible region or even within a specified radius of a known location.



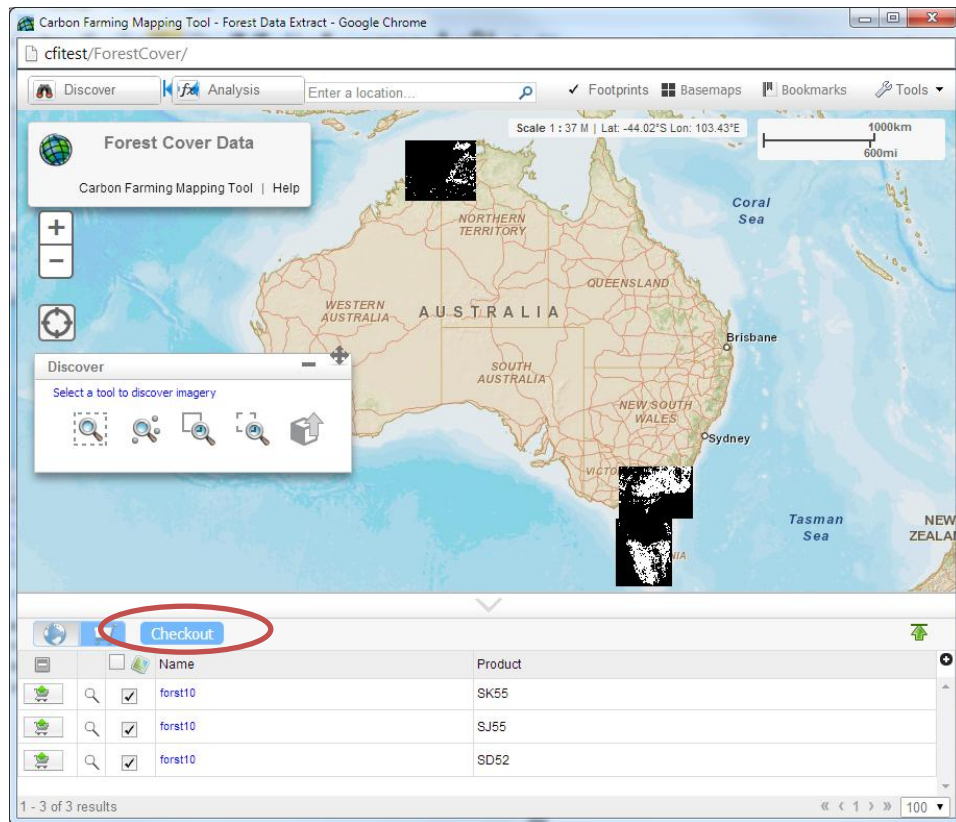
Example search for Tiles within the visible extent.

4. Preview and select Forest Cover tiles for checkout by clicking on the tile. Footprints which are drawn on the map or by utilising the buttons provided in the results grid at the bottom of the screen. Any Forest Cover tile can be added to the Download Cart by simply clicking on the shopping cart icon associated with it.



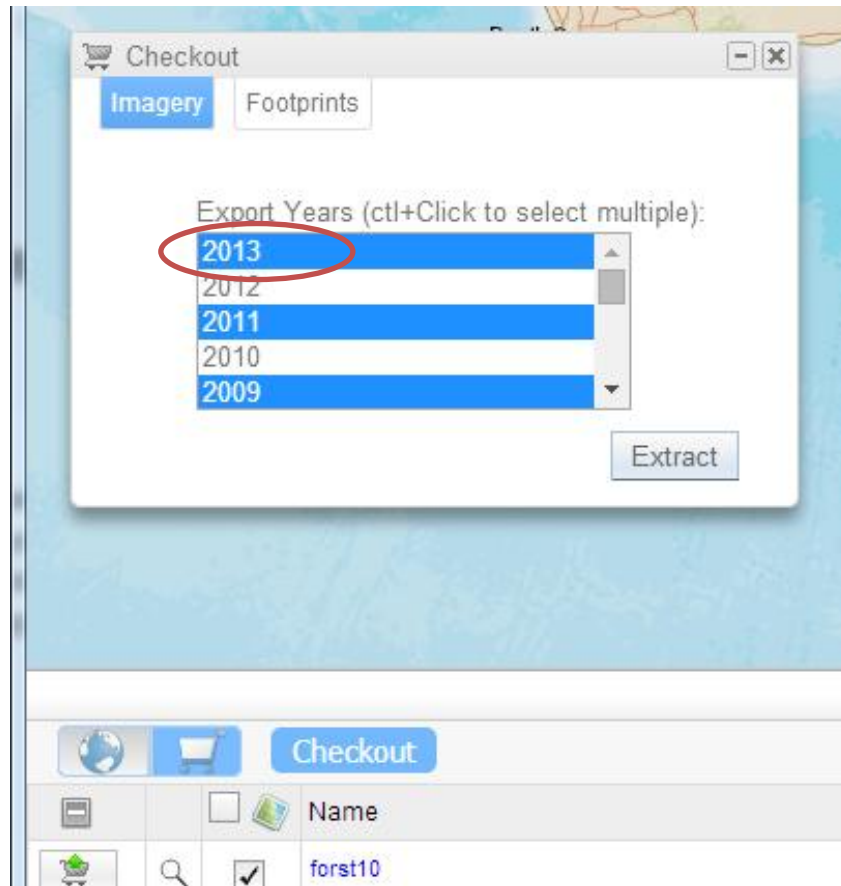
Adding Tiles to the Download Cart

- Once all the required tiles have been added to the Download Cart, the user can proceed to the checkout process by enabling **Checkout** View via the large shopping cart above the results list. Checkout View provides the user with an opportunity to review the content that has been selected for download and remove any items from the shopping cart.



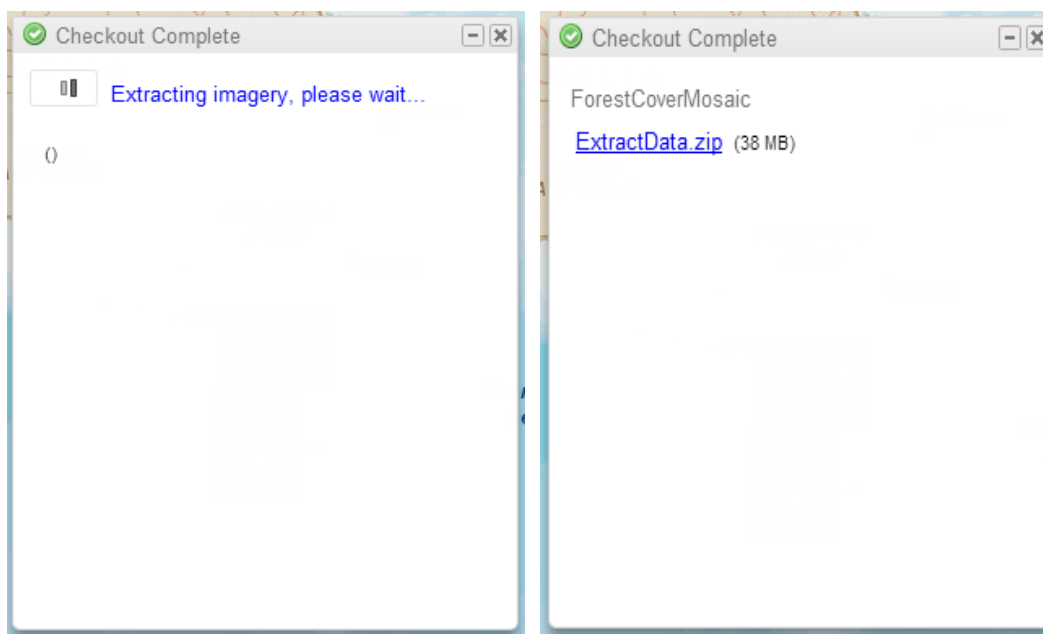
Checkout View; reviewing 3 tiles selected for download.

- Once the user is satisfied with the map tiles added to the Download Cart, they may proceed to the checkout process by clicking the “**Checkout**” button above the tile results list. This will present the user with the final options required before actually collating and delivering the requested content.



Final Checkout options before download

- The user should specify which year(s) of data are required for download (multiple years can be selected by holding the Shift or Ctrl keys whilst selecting from the list of years).
7. Once complete, the user should click the “Extract” button. A dialog will be displayed indicating the progress of the data extraction process. Once complete, the system shall display a link to the prepared content and an indication of the file size of the generated download. In general, a single tile for one year of forest cover will occupy disk space of approximately 12Mb compressed.

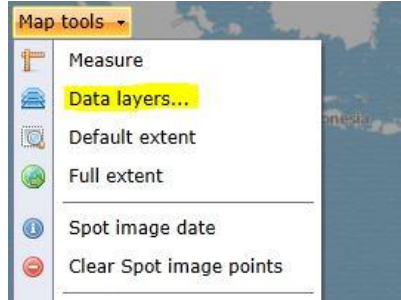


Final extraction of Forest Cover data

Once generated, the user should click on the link to the compressed download to begin the process of transferring the content to their computer.

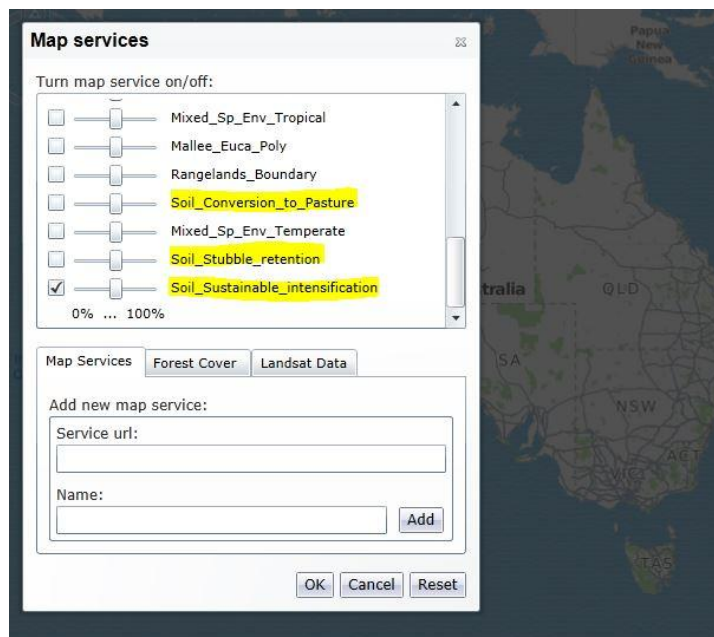
How to find the soil carbon sequestration value?

Begin by adding a data layer for the relevant soil carbon project type.
To add a data layer, click on the Map Tools menu on the map, and choose “Data Layers...”



The “Map Services” dialogue box will appear. Press the “Reset” button: this will show the necessary data layers.

Scroll down within the dialogue box until you see the Soil Carbon layers (“Soil_Sustainable Intensification,” “Soil_Conversion to Pasture,” “Soil_Stubble Retention”).



Tick the box next to the layer relevant to your project type to add a data layer to the map.

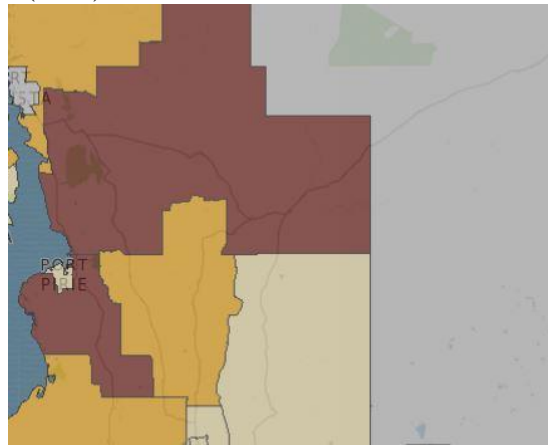
Note: By default the tool opens with multiple data layers enabled. For the purpose of locating a carbon sequestration value, it is important to turn off layers that are not relevant to the project activity you are seeking a value for. **Failing to do so could lead to derivation of an incorrect sequestration value for your region.**

For this purpose we suggest you turn on the following two layers to start with when conducting this exercise. You can add additional layers such as Spot high resolution imagery or ALOS data later on if necessary to see landscape details which may assist in locating and plotting the CEA.

- MDS Foundation Map

- One of either “Soil_Sustainable Intensification,” “Soil_Conversion to Pasture” or “Soil_Stubble Retention,” as determined by the type of project activity you are looking to undertake.

Next, locate your property and draw a new carbon estimation area on the map (see page 22). You can use the search tool function to locate your area of interest by typing nearest locality name.. The carbon estimation area must be located entirely within a Statistical Area Level 2 (SA2), in accordance with subsection 14 of the determination “Estimating sequestration of carbon in soils using default values.” An SA2 is depicted by a grey boundary line. Note that multiple SA2s of the same sequestration value may be grouped on the map. You must identify the boundary for the SA2 for your CEA. If your property falls in 2 or more statistical areas then you need to draw a separate CEA for each Statistical Area Level 2 (SA2).



The selected map displays three possible colours with each corresponding to a sequestration value, or land will appear grey if it is not eligible land.

When you have located the region and identified the colour, the sequestration value can be found by comparing the colour to the following table. Note the sequestration values are not displayed on the map. The map only shows one of the four colours and a corresponding SA2 location.

Project Management Activity	Not Modelled	Sequestration value tCO ₂ e/ha/year		
	1.0 Ineligible land Grey	1.1 Marginal benefit Yellow	1.2 Some benefit Orange	1.3 More benefit Brown
Conversion to pasture	No value	0.22	0.44	0.84
Stubble retention	No value	0.07	0.29	0.73
Sustainable intensification	No value	0.11	0.59	1.65

The Department may, if requested, make the data layers available to proponents who wish to use them on their own mapping software. Requests can be made by contacting the

ERF on 1800 852 974, or via the following link:
<http://www.environment.gov.au/webform/website-feedback>

If you have suggestions to improve the quality of this manual, please email:

NCAS-GIS-RS@environment.gov.au

Thank you!